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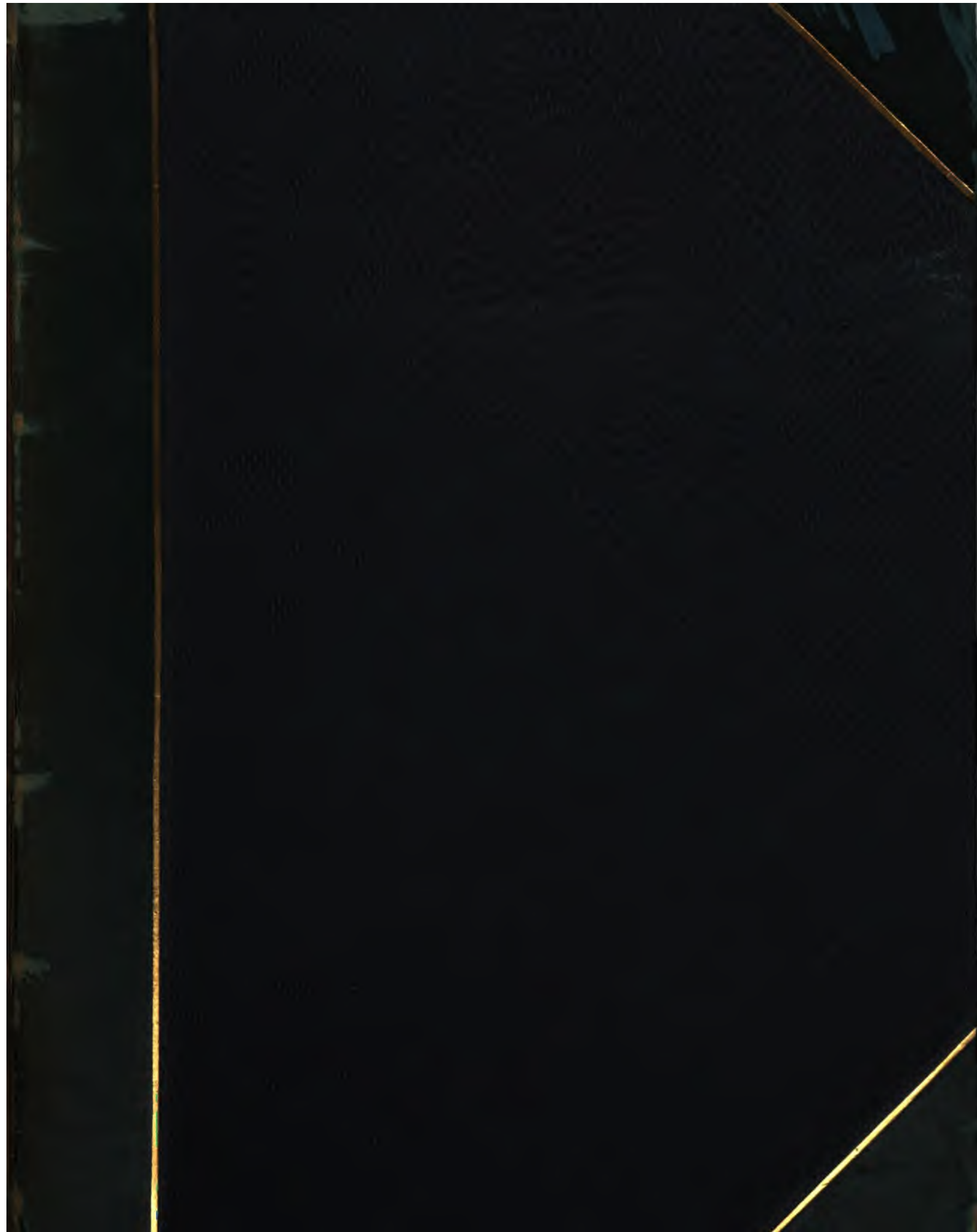
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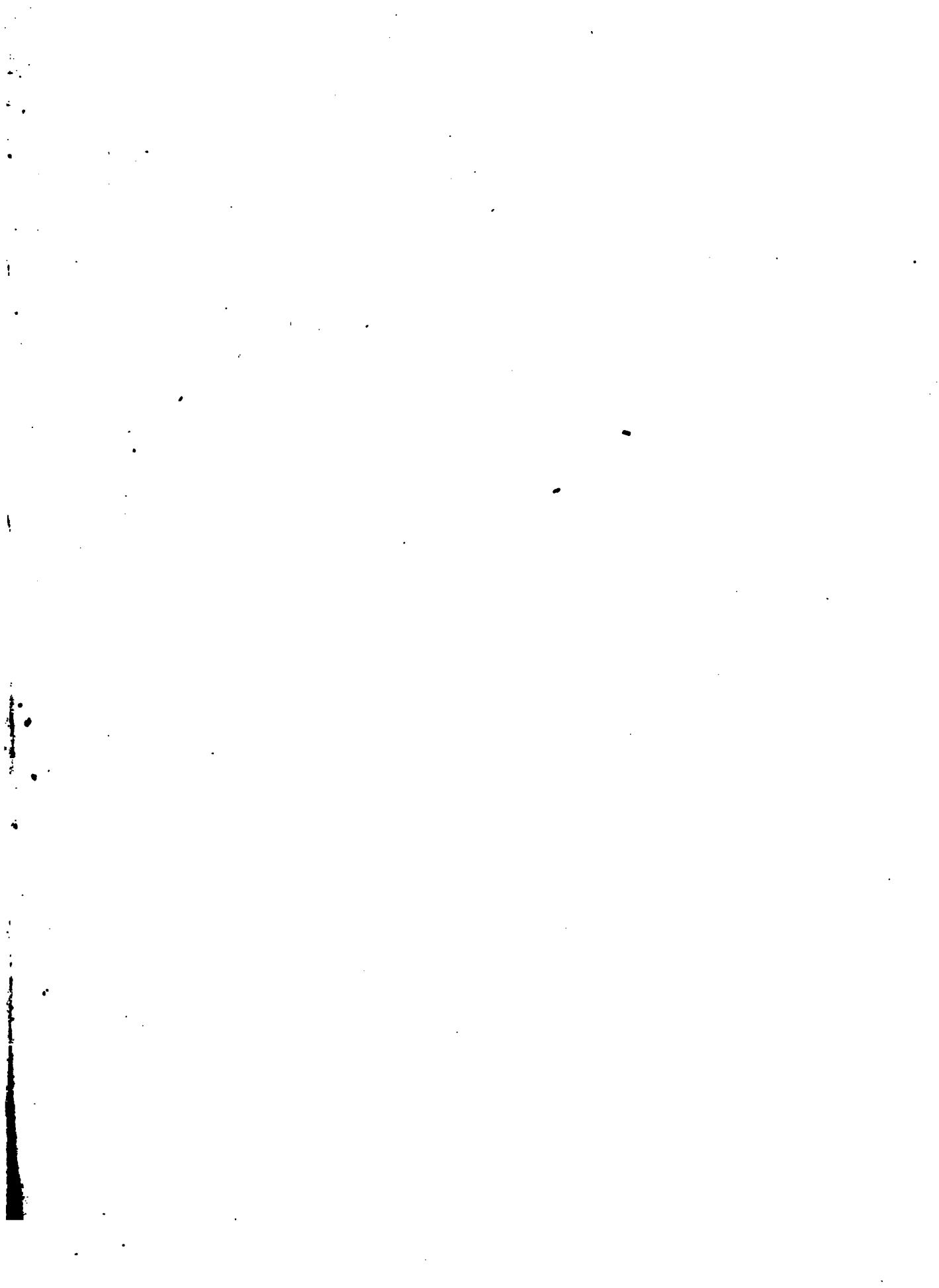
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SECOND SUPPLEMENT

TO THE

MONOGRAPH OF THE CRAG MOLLUSCA,

WITH

DESCRIPTIONS OF SHELLS

FROM THE

UPPER TERTIARIES OF THE EAST OF ENGLAND.

BY

SEARLES V. WOOD, F.G.S.

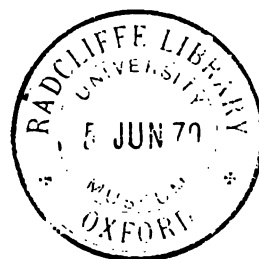
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GENERAL TITLE-PAGE; PAGES i, ii; 1—58; PLATES I—VI.

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## P R E F A C E.

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WHEN I had completed my first Supplement to the "Crag Mollusca" in 1872-4, I did not contemplate ever attempting any further addition, as even if I had desired to make any, my advanced years rendered it improbable that I could accomplish such a thing. The discovery, however, of some shells at Boyton, one of them (*Fusus Waelii*) apparently identical with a shell from older beds in Belgium and Germany, and two others (*Murex Reedii*, and *M. pseudo-Nystii*) presenting an approach to certain Murices of the same older beds, were of such interest as to render their representation by figure and description desirable, for if, as is probable, they lived in the Coralline Crag sea, they furnish evidence of a nearer connection of that sea with the Miocene than modern opinion has been inclined to grant.

I was thus induced to enter upon a second Supplement, which I at first thought might be confined to a single plate, but when this had been engraved I reflected that as so many species had been introduced into lists of Crag shells, which I had not introduced into my first Supplement from a feeling that the authority for them was too scant or doubtful to justify it, or, in some instances, from a feeling that the identity was erroneous, it was incumbent on me to present to geologists by figured representations the evidence upon which these introductions were based. This, therefore, I have endeavoured to do, and by it have, perhaps, exposed myself to the objection that the plates have been extended to but little purpose, as many of the so-called new species are either very doubtful in themselves, or are merely derivatives from destroyed beds; though most of these beds probably belong either to the Coralline, or to some still older part of the Crag; *i.e.* to the oldest Pliocene, now present in Belgium. To such objections my answer would be that I have long felt that the introduction of so many new species into Crag lists, either from the unsatisfactory evidence of a single specimen, or from the (in my view) improper identification made, or from the presence of mere derivatives, must produce among geologists, especially those abroad, very erroneous conceptions of the Crag Fauna; and that it was to the advantage of science that these evidences should be placed in an appreciable form before the scientific world.



I fear that most of the additions thus made of late years to the Crag Fauna, coupled with the antagonism between the views of Dr. Jeffreys, concerning the identification of many Crag shells with recent species (as expressed by the list which accompanies the paper of Prof. Prestwich, in the twenty-seventh Volume of the 'Journal of Geological Society') and those of myself, will render the subject of the Crag Mollusca, for some time to come, a subject of more perplexity than interest to students of the upper tertiaries.

I have now by inquiry in every quarter which afforded the slightest chance of result exhausted all possible additions to the Molluscan Fauna of the Crag up to the present time, doubtful or otherwise, and dealt with them in the present Supplement.

Dr. Lycett has (after a lapse of more than twenty years) written to me that the attribution of an analysis of the *Myadæ* to Prof. Morris made in the footnote to p. 265 of my second volume of the "Crag Mollusca" was an error, and that the analysis was entirely his own. I take this opportunity, therefore, of acknowledging the error, and of expressing my regret for it.

S. V. WOOD.

NOVEMBER, 1878.

# SECOND SUPPLEMENT

TO THE

## C R A G M O L L U S C A.

---

BUCCINUM NUDUM, *S. Wood.* 2nd Sup., Tab. I, fig. 1 *a, b.*

*Spec. Char.* *B. Testá tenui, elongato-ovatá, turritá, lævigatá, apice obtusá, depressá; anfractibus septenis, convexiusculis; suturá impressá; aperturá ovatá; labro tenui acuto, columellá regulariter concavá.*

*Axis*  $2\frac{1}{4}$  inches.

*Locality.* Cor. Crag, Sutton.

The shell here represented is from the collection of Mr. Canham, who tells me he obtained it from the lower part of the Cor. Crag at Sutton. The shell is very thin and fragile and has lost some small portion of its exterior and a small part of the shell, but it has retained its natural form by the somewhat slight consolidation of the material within. It resembles a shell I figured in my Suppl., Addendum Plate, fig. 11, under the name of *Buc. Tomlinei*, but that is not quite so elongated as the present one, and it is ornamented with large and distinct spiral striæ; while our present shell, where the outer coat has been preserved, appears to have been perfectly smooth and very thin. I have a cast of this shell in one of the so-called "box stones" of the Red Crag. It belongs apparently to a group of shells of which *Buc. Dalei* may be considered as the type; but it departs as much or more from that species as does the other Cor. Crag shell *pseudo-Dalei*. Both, however, are obnoxious to the same objection that they are founded on solitary specimens. To this objection the extreme rarity in the Cor. Crag of the normal form *Dalei* is to some extent an answer.

At fig. 5 *a, b*, tab. i, of the same plate is represented a specimen which I have referred (with doubt) as a deformity to *Buc. undatum*; it somewhat resembles a shell I figured in Sup. to Crag Moll., tab. ii, fig. 5, and considered as a deformed specimen or variety of that species, and I am inclined to think our present shell is in a similar condition. It was sent to me by Dr. Reed, and is said to have come from the Red Crag of Butley, the locality from which I obtained my specimen. The volutions are somewhat angulated at

the base, and slightly so at the shoulder, where there are traces of undulated ridges like those of *undatum*.

I have also figured another shell from the Cor. Crag belonging to Dr. Reed which, I think, is a deformed specimen of *Buccinum Dalei* (2nd Sup., tab. i, fig. 2); the thickened margin was formed, I imagine, when its growth was arrested, and the ridge upon the columella is, I think, the result of disease, and therefore only a malformation.

*BUCCINUM DECLIVE*, *S. Wood*. 2nd Sup., Tab. II, fig. 10 *a, b*.

*Locality.* Cor. Crag? Boyton.

This is another specimen out of the rich cabinet of Dr. Reed, who gives it from that somewhat doubtful locality of Boyton. This specimen may be described as ovato-fusiformi, spirâ elevatâ, apice obtusâ, spiraliter striatâ, anfractibus 5—6 convexis, suturis depressis, valdè distinctis, obsoletè costatâ; aperturâ ovatâ, labro simplici acutâ; canali breve. It is, I believe, distinct from any of the varieties of the variable shell *B. undatum*, the volutions are more convex, with a much deeper suture, and it has a more obtuse or mammillated apex.

The shell has been a good deal rubbed. The striæ, although somewhat obliterated, are visible in places, and the longitudinal ridges are also visible, but not very regular or distinct. These do not appear to be at all "undulated" as if the outer lip had been sinuated, and as this character seems to indicate that the shell is distinct from *undatum*, I have assigned to it the above name, but it must be regarded as a doubtful species.

*NASSA PRISMATICA*, *Brocchi*. 2nd Sup., Tab. I, fig. 6.

*BUCCINUM PRISMATICUM*, *Broc.* *Conch. Foss. Subap.*, p. 337, t. v, fig. 7, 1814.

*Spec. Char.* "*Testâ ovato-oblongâ, longitudinaliter costatâ, striis transversis crebris, elevatis, labro columellari, supernè uniplicato, basi reflexâ, emarginatâ*" (Brocchi).

*Axis* 1 inch.

*Localities.* Cor. Crag, Sutton.

Fossil in Piacentino, Italy.

The present specimen is from the cabinet of the Rev. Mr. Canham, and from the lower part of the Coralline Crag. The shell represented under this name in the Crag Moll. vol. i, p. 32, tab. iii, fig. 6, is, I now believe, a distinct species, and I have resumed the name of *Nassa microstoma* for it as next described.

Our present specimen is not quite so large as the one figured by Brocchi, which is a full-grown shell, whereas the one now represented has not attained to maturity, and has the outer lip sharp without denticulation on the inside of it.

NASSA MICROSTOMA, *S. Wood*. 2nd Sup., Tab. I, fig. 4 *a, b*.

NASSA MICROSTOMA, *S. Wood*. Catal. Mag. Nat. Hist., 1842.

— PRISMATICA, *S. Wood*. Crag Moll., vol. i, p. 32, t. iii, fig. 6, 1848.

— ELEGANS, *Dujard*. Tr. Geol. Soc. Fr., p. 298, pl. xx, figs. 3—10, 1837.

*Spec. Char.* Testā turritā, spirā elevatā, costatā, costis 20—24, spiraliter striatā; anfractibus 7—8, convexis, suturis profundis, aperturā rotundato-ovatā; labro incrassato, intus denticulato; labio supernè uniplicato.

Axis  $\frac{9}{16}$  of an inch.

*Locality.* Cor. Crag? Boyton.

Fossil in Touraine, France.

The specimen represented in the above figure is from the cabinet of Mr. Robert Bell, and he tells me that it came from Boyton. Doubts occur as to whether shells from this locality, not previously known in the Crag, belong to the Red or to the Coralline Crag,<sup>1</sup> but I am inclined to refer our present specimen to the older formation, both from the colour and appearance of the shell and from its apparent connections.

I now consider this species as specifically distinct from *prismatica*, and probably the same as the shell figured in Crag Mol., vol. i, Pl. III, fig. 6, and which in my synoptical list is inserted as *Nassa prismatica* var. *limata*. I refer it to *N. elegans*, Dujardin, an abundant Touraine shell which is much less than *prismatica*, has a greater number of costæ, and a smaller opening comparatively; as it is quite distinct from the well-established Red Crag species called *N. elegans* by the late Rev. G. R. Leathes in 1824, while Dujardin's name of *elegans* bears a date of 1837, it is necessary to suppress the latter to avoid confusion, and I have therefore assigned to it the name *microstoma* which I used first in my catalogue of 1842 referred to.

<sup>1</sup> I have not been able to see the Boyton excavation open, but I am informed that a thin layer of Red Crag is found there reposing upon a small thickness of Coralline, and the whole being inundated with water the two are shovelled out together and washed for the phosphatic nodules, so that the specimens from each bed are intermingled beyond possibility of distinction other than what may be drawn from the appearance of the specimen or the character of the species.

NASSA CONSOCIATA, *S. Wood.* 2nd Sup., Tab. IV, fig. 13 *a, b*; Crag Moll., vol. i, p. 31, Tab. III, fig. 7.

*Axis*  $\frac{3}{4}$ ths of an inch.

*Locality.* Red Crag, Waldringfield.

The specimen figured as above referred to is said by Mr. Canham to be from Waldringfield, and is in the collection made by him and now placed in the Ipswich Museum. That locality has yielded so many derivatives that I think the present shell may have been introduced from the destruction of material belonging to the Coralline Crag period. It is larger than any specimen I have from this latter formation, but this constitutes the only difference that I can discover.

Tab. IV, fig. 15, represents a small specimen of *Nassa* from the Red Crag of Butley, sent to me by Mr. Robert Bell with the MS. name of *N. tumida*, as he considers it a distinct species. This I have had figured, as it presents some differences from *N. incrassata* (the shell to which I believe it approaches nearest) in being more ovate and possessing more numerous costæ, and in being smaller; but as I do not think that these suffice to distinguish the shell specifically from *incrassata*, I have here called it var. *tumida* of that species. In the same Plate, fig. 12, is represented a small specimen from the Red Crag of Sutton, which I think is only a dwarf individual of *Nassa granulata*, here called var. *nana*; it much resembles *N. granifera*, but in that shell the costæ stand further apart with a plain space between them. In our present shell the costæ meet at the bases.

NASSA ANGULATA ? *Brocchi.* 2nd Sup., Tab. IV, fig. .

BUCCINUM ANGULATUM, *Broc.* Conch. Foss. Subap., p. 654, tab. xv, fig. 18, 1814.

*Locality.* Boyton.

This is another form of the genus *Nassa* for which I have had great difficulty in making a reference, and have given to it the above one provisionally, having seen but the single specimen now figured, and this comes from a locality of doubtful age. It is from Mr. Robert Bell.

COLUMBELLA ? (ASTYRIS) SULCULATA, *S. Wood.* 2nd Sup., Tab. I, fig. 3.

*Spec. Char.* *C. Testâ turritâ, elongatâ, spirâ elevatâ, apice obtusâ, acuto ? anfractibus convexiusculis, transversim late sulcatis ; aperturâ quadrato-ovatâ ; labro intus denticulato ; basi truncatâ, canali breve.*

*Axis*  $\frac{3}{4}$ ths of an inch.

*Locality.* Red Crag, Sutton, Shottisham.

The specimen figured is from the cabinet of Dr. Reed, and to this the name of *Lachesis magna* was attached by Mr. A. Bell, but it appears to me to approach so near to *Columbella sulcata*, J. Sow., from Walton Naze, see Crag Moll., vol. i, p. 23, tab. ii, fig. 2, that I have given to it the same generic name of that aberrant section of *Columbella*.

Our present shell may be described as having an elevated spire, volutions slightly convex, ornamented with five or six rather broad and flattened striæ, separated by a fine and narrow line, with a deep and distinct suture; the aperture is ovately quadrangular, but not so much so as that of *C. sulcata*; the columella somewhat concave, and the canal short; the apex is not quite perfect.

Since the figure was engraved Mr. Robert Bell has presented me with a specimen of this species, a trifle larger than the one figured, and to this he has given the generic name of *Pisania*, but I see nothing in the specimen to require (according to my view) a new generic position.

I have here also given the representation of a shell in my own cabinet (2nd Sup., tab. iii, fig. 11), which I think is a distorted, abraded, and immature specimen of *Columbella sulcata*. It is ornamented with the same kind of spiral striæ, the last whorl (only) inflated, and the volutions are made more convex by decortication.

*Lachesis Anglica*, Sup., Crag Moll., Addendum Plate, fig. 7, probably belongs to the same section of *Columbella*. I do not know what especial character is given to the shell for the generic name of *Lachesis*.

PURPURA LAPILLUS. 2nd Sup., Tab. I, fig. 13.

The shell shown in the above figure represents a specimen that has been sent to me with the name of "Buccinum?" but I believe it to be simply a distortion of *Purpura lapillus*, and as it comes from Bramerton, whence I had previously received many specimens of other shells greatly distorted, I am strengthened in this view, and the shell may be classed with other distorted specimens figured in the Crag Moll.; see tab. iv, fig. 6, and tab. xix, fig. 12. The full-grown individuals of this species, or at least nearly all of them, have the outer lip sharp and simple, but in the young state the specimens are sometimes regularly and strongly dentated on the inside of the outer lip. I have other specimens of the same size, and less than the one figured, which have a few and strongly marked denticles on the right side of the aperture, but in general they are absent. The present specimen has been much rubbed and abraded, indicating the shallowness of the water in which it had lived. What should cause this peculiar dentation to the aperture in some of the young shells and not in others I am unable to explain. This character of dentation

is an accompaniment of the full-grown shell in most species rather than of the young, and I have had the specimen figured lest by any chance it should have been regarded as some new species and added to the number of such in lists of crag shells for which I can find no warrant.

Captain Brown has figured a specimen of this species with a dentated outer lip ('Illustr. Conch. Grt. Britain,' Pl. xlix, fig. 6), which he has called *Purpura Anglicana*, referring to 'Lister's Conch.,' Pl. 965, fig. 18. "Lister does not say from whence he obtained this singular variety" (Brown).

TROPHON (SIPHO) ISLANDICUS, *Chemnitz*. 2nd Sup., Tab. II, figs. 3 *a*, 3 *b* recent.

FUSUS ISLANDICUS, *Forb. and Hanl.* Brit. Moll., vol. iii, p. 416, pl. ciii, fig. 3, 1853.

*Locality.* Red Crag, Sutton.

The shell figured as above represents a specimen which I found many years ago and regarded as a var. of *Trophon gracilis*, figured and described in Crag Moll., vol. i, p. 46, tab. vi; but which I here give as a true representation of the recent British shell called *Islandicus* (fig. 3 *a*); and by the side of it have had engraved the figure of a recent specimen of that species for comparison, (fig. 3 *b*) because it has been said not to be a crag species. This shell is rather more elongated than *gracilis*, and deserves the name of *angustius*, originally given to it long before the time of Linné or of Gmelin, and which I adopted in my original catalogue published in the Annals of Nat. Hist. in 1842, p. 541. That name, however, being anterior to the time of our starting point, the 12th edit. of Linné, I give the shell under the usually received name of *Islandicus*.

TROPHON (SIPHO) TORTUOSUS, *L. Reeve*. 2nd Sup., Tab. II, fig. 2 *a*, *b*.

TROPHON GRACILE, var. *S. Wood*. Crag Moll., vol. i, p. 46, tab. vi, fig. 10 *b*, 1848.

Dr. Reed has lately sent me several specimens both from the Coralline and Red Craggs that belong to a group of shells of which *Fusus Islandicus* may be considered as the type. Among those from the Red is one (fig. 2*a*) supplied by Mr. A. Bell and marked by the latter as *Fusus tortuosus* of L. Reeve, figured and described in Sir Edward Belcher's 'Last of the Arctic Voyages,' vol. ii, p. 394, Pl. xxxii, fig. 5 *a*, *b*.

The shell figured in the Crag Moll., tab. vi, fig. 10 *b*, is referred by Mr. A. Bell to the same species, and I am now disposed to think that Mr. Bell's references of this shell to Lovell Reeve's species is correct, if the differences be sufficient to constitute a specific

removal. Mr. Bell also says that fig. 10 *a, c*, of the same plate may be referred to *Fusus Olavii*, Beck, and considered a distinct species.

The principal character, indeed I believe the only one, by which *tortuosus* can be distinguished from either *gracilis* or *propinquus* is the greater convexity of the volutions; the form of the canal being similar in each with the volutions covered by regularly broad-spiral striæ. I have here had represented as above (fig. 2 *a*) the specimen from Dr. Reed, and which, in outward form, varies from the figure in the Crag Moll. as also from that given as mentioned by Lovell Reeve. I think it may be considered only as a variety; it is said to have come from Waldringfield. Fig. 2 *b* of my present plate is the representation of a specimen of my own found by myself in the Red Crag at Sutton many years ago, and this I now think is only a slight distorted form of *tortuosus*, as I have two others similar in the volutions, but not so perfect, and thought it only a variety, not of sufficient importance to deserve a figure; but so many separations having been made out of a group of shells which probably may be united under the name of *Sipho*, I have had it here figured and have endeavoured to group these shells together under that name, which have been found in the Upper Tertiaries of the east of England, viz.:

Trophon ( <i>Sipho</i> )	<i>Islandicus</i> ?	<i>Chem.</i>	2nd Sup., tab. ii, fig. 3.	Red Crag.
—	—	<i>Olavii</i> , Beck.	Crag Moll., vol. i, p. 46, tab. vi, fig. 10 <i>a, c</i> .	Red Crag.
—	—	<i>gracilis</i> , Da Costa.	2nd Sup., tab. ii, fig. 4.	Cor. Crag.
—	—	<i>propinquus</i> , Alder.	App. Crag Moll., tab. xxxi, fig. 3 <i>a. b</i> .	Cor. Crag.
—	—	id.	Sup., tab. vii, fig. 21, sinistral.	Red Crag.
—	—	id.	2nd Sup., tab. ii, fig. 5.	Cor. Crag.
—	—	<i>Sarsii</i> , Jeff.	Sup., p. 23, tab. i, fig. 9.	Red Crag.
—	—	<i>tortuosus</i> , L. Reeve.	Crag Moll., vol. i, tab. vi, fig. 10 <i>b</i> .	Red Crag.
—	—	id.	Sup., tab. ii, fig. 15 <i>a</i> .	Red Crag.
—	—	id.	2nd Sup., tab. ii, fig. 2 <i>a, b</i> .	Red Crag.
—	—	<i>Sabini</i> , Hancock.	Sup., tab. ii, fig. 15 <i>c</i> .	Bridlington.
—	—	<i>ventricosus</i> , Gray.	Sup., p. 22, tab. iii, fig. 4.	Bridlington
—	—	<i>Leckenbyi</i> , S. Wood.	Sup., p. 24, tab. vii, fig. 1.	Bridlington.

The whole of these may very probably be only inconstant varieties of *Islandicus*, but I have figured them under the names of their authors to show their occurrence in the deposits embraced by my Monograph. *T. Leckenbyi* of myself stands in this respect on an equal footing with the other so-called species given above.

*Note.*—*Sipho*, Klein, 1753. This name is previous to our starting point, the 12th edit. of Linné, but it appears now to be adopted by many of our conchologists.



TROPHON PSEUDO-TURTONI, *S. Wood*. 2nd Sup., Tab. II, fig. 1 ; and Tab. IV, fig. 1.

TROPHON NORVEGICUS ? *Chemn.* Appendix to Crag Moll., t. xxxi, fig. 1 ; 1st Supplement to Crag Moll., t. v, fig. 14 ; and Addendum Tab., fig. 16.

*Locality*.—Red Crag, Waldringfield.

In the Appendix to the Crag Mollusca and in my previous Suppl. are figured and described some specimens of this shell, none of them perfect, under the name of *Trophon Norvegicus*. The perfect specimens which I am now able to represent seem to me to differ so considerably, however, from the recent shell called *Norvegicus*, that I have proposed for it the above name, indicative at once of its distinctive character from *Norvegicus* and of its affinity to that species. Our present shell possesses more convex volutions and a much deeper suture, a longer spire with a smaller and shorter opening. The recent shell *Norvegicus* is described as having "the body whorl disproportionately large compared with the spire ;" "the body occupies  $\frac{2}{3}$ ths of the dorsal length." The body whorl of our present fossil measures only half of its entire length, and is also more strongly striated ; for assuming even that it has been decorticated and lost some of its outer coating, these striæ are more visible than those on the living shell, which on a specimen in my possession are principally confined to the epidermis, or at least are but very slightly visible beneath it. I am anxious to have this fossil correctly described and delineated because in a list of fossils from Uddevalla, by Mr. Jeffreys, read at the Brit. Assoc. 1863, at p. 77, is the name of *Fusus Turtonii*, Bean, with this remark "a var. approaching in shape *F. Norvegicus*;" and I imagine this Uddevalla fossil may possibly be the same as our present specimen. I cannot, however, fairly refer the shell figured to either of those species ; and it appears to me to be intermediate between the two. The late Dr. S. P. Woodward in his list of shells from the Norwich crag has the name of *T. Norvegicus* (J. M. and R. F.) which as well as the one called by Mr. Bell *F. Lagillierii* (Sup. to Crag Moll., Addendum Plate, fig. 16), may also, I imagine, be the same as the present shell.

The specimen figured, Tab. IV, fig. 1, is from the Ipswich Museum by the kindness of Dr. J. E. Taylor, the curator.

TROPHON (TRITONOFUSUS) ALTUS, *S. Wood*. 2nd Sup., Tab. I, fig. 11. Crag Moll., vol. i, Tab. VI, fig. 13, as *Trophon altum*. 1st Sup., p. 23, Tab. II, fig. 17.

To whatever genus this shell may belong, the specimens exhibit great variation like

those of *Buccinum undatum* and *Trophon antiquus*. A further figure which I have now given shows the canal not to be prolonged beyond the lower portion of the outer lip, corresponding in that respect to the diagnosis of the genus *Buccinum*. Some of the specimens I have figured and referred to this species have on the upper portion of the spire some obsolete costæ, which are absent from our present specimen; but this, I think, is insufficient for specific removal, as the same differences may be seen in specimens of the common *Buc. undatum*.

The specimen now figured is from the cabinet of Dr. Reed, who obtained it from Mr. A. Bell, by whom it had been labelled as a new species from the Red Crag, Butley, which was one of the reasons that induced me to have it figured. It is a very perfect specimen, and shows an expanded lip like that of *Buccinum*.

*TROPHON (BUCCINOFUSUS) KRÖYERI* ? *juv. Moller.* 2nd Sup., Tab. III, fig. 8.

*FUSUS KRÖYERI, Möll.* Index Moll. Grœnlandiæ, p. 15, 1842.

*Axis* 1 inch.

*Locality.* Red Crag, Shottisham.

The present specimen has been sent to me by Mr. Robert Bell with the above name, and I give it on his authority; he says he has compared it with a recent specimen of the above name in the British Museum, and it appears to him to correspond with the younger or upper part of that species. I saw that species in the British Museum some years ago, and so far as my memory will assist me, I think probably it may be so. I have given to it the above name with a mark of doubt, as it will be necessary to have a better specimen for a more correct determination. The specimen is without striation, or otherwise the striæ have been obliterated.

*FUSUS WÆLII, Nyst.* 2nd Sup., Tab. I, fig. 10 *a, b, c.*

*FUSUS WÆLII, von Könen.* Mitt. Oligoc., p. 76, taf. vi, fig. 2 *a—d*, 1867.

— — *S. Wood.* Quart. Journ. Geol. Soc., vol. xxxiii, p. 120, 1877.

*Spec. Char.* *F. Testâ elongato-fusiformi, spirâ elevatâ, apice obtusâ; anfractibus convexis, longitudinaliter costatis, spiraliter striatis; aperturâ ovatâ; canali, elongato paulo contorto terminato.*

*Axis*, 1 inch.

*Locality.* Cor. Crag, ? Boyton.

This shell was noticed by me as from the Coralline Crag in the 'Quart. Jour.' of the Geol. Soc. above referred to, and I have now the opportunity of figuring the specimens. I have also since then received two specimens of the typical oligocene form from Dr. Nyst, from the locality of Baesele, near Boom (Rupelien); and I think the British Crag Fossil may safely be referred to it. The only difference which I can detect is that the inside of the outer lip in one of the Belgian specimens is denticulated, while that of the Crag shell is not. The other specimen sent to me by Dr. Nyst, however, does not present this character; nor so far as I can see do specimens sent me by Dr. Von Könen, from the German Oligocene of Sternberger Gastein, nor by some specimens from the Oligocene of Rupelmonde, in Belgium, sent me by M. Rutot; the artist has given a representation to my specimen which might be mistaken for denticulations on the inside of the outer lip, but there are none, and the ribs are not so wide and coarse as he has shown them. I have had the only two specimens (which I believe have as yet been found) figured, one of which is more elongated than the other, and they appear to correspond as well with the two figures given by Dr. Von Könen as with the oligocene specimens to which I have referred. Our shell has eight, somewhat rounded ribs or costæ upon the last volution, the spiral striæ resemble those upon the Baesele shell, and the caudal termination is long and slightly twisted as in the one before mentioned; the apex is obtuse, with the first volution apparently smooth, but the volution not being perfect this cannot positively be affirmed. This shell also very strongly resembles *Fusus crispus*, and a worn specimen was figured by me in my first Suppl. under that name, with a note doubting the correctness of the reference (p. 29, Tab. II, fig. 10). Two specimens with the name of *F. crispus*, Broc., and the syn. *F. Rothi*, and the locality Bekken (miocene) attached, I have, by the kindness of M. Bosquet, long possessed, and these show prominent and sharp spiral striæ, with two small ridges upon the columella; but these ridges are not visible in the only two worn specimens from the Crag, on which I made the reference in p. 29 of my Suppl. A fine specimen of *F. crispus*, Borson, sent me by Dr. Von Könen, from the Miocene of Langenfelde near Hamburg, has the inner part of the outer lip denticulated, but has no folds on the columella; in other respects it agrees with specimens sent me from the bed at Kiel and Edeghem in Belgium, under the name *F. seacostatus*. A specimen of *F. seacostatus* from the Miocene of Dingden near Wesel, kindly sent me by Dr. Könen is destitute of these folds on the columella, and were it not that the three upper whorls are smooth (which is not the case with the Crag specimens), would equally agree with the more elongated form of the two now given specimens figured above. On the other hand, specimens sent me by M. Rutot, under the name of *F. seacostatus*, from the so-called Miocene of Kiel and Edeghem in Belgium, with the apices perfect, are destitute of these three unornamented whorls; but one of them has two folds on the columella; another (the largest) has but one, while another, the smallest, has none at all. Not one of these three last-mentioned specimens has the inside of the outer lip denticulated, and the

smallest of them is not distinguishable in any respect from the longer of the two Crag specimens which I have figured under the name of *Waelii*. Under these circumstances it seems to me that, though *F. Waelii* is not recognised as a species of the Belgian Miocene (a formation which M. Vanden Broeck now refers to the oldest Pliocene, contending that the true Miocene is absent in Belgium), the shell I have figured under this name does occur in the Belgian formations; and it may perhaps be that, if a large series of specimens of *F. Waelii*, *F. crispus*, and *F. seacostatus*, were compared with each other, it would be impossible to separate them into distinct species.

The specimens present all the appearance of genuine fossils of the Coralline Crag, though from their locality (see footnote, p. 3) a question may attach as to this.

*Fusus* ? *obscurus*, *S. Wood*. 2nd Sup., Tab. I, fig. 12 *a*, *b*.

*Axis*,  $\frac{7}{8}$ ths of an inch.

*Locality*. Cor. Crag, ? Boyton.

A single specimen, to which I have given the indefinite or undefined generic name of *Fusus*, was kindly sent to me by Mr. R. Bell. Although the shell is perfect it is decorticated throughout, and it is impossible to say whether it was, in its perfect condition, striated or not; but in its present state I cannot discover any trace of striæ upon it. I give it therefore under the above name from its uncertain characters.

*Fusus* ? *exacutus*, *S. Wood*. 2nd Sup., Tab. II, fig. 18.

*Locality*. Cor. Crag, Sutton.

Our present figure represents only a fragment of a shell which has been in my Cabinet for many years. It was found by myself at Sutton in the upper portion of the Coralline Crag, and I have kept it hitherto unfigured in the hope of a better specimen turning up. On the left or columella side of the aperture is the impression of what appears to have been that of the fleshy lobe of the animal, but it is not represented in the engraving. The large opening in the outer lip is too low for a sinus, and is, I believe, simply a fracture. I think the specimen belongs to the genus *Fusus* and not to *Pleurotoma*. I now figure it because at my advanced age I must relinquish the hope of seeing a more perfect specimen.

*FUSUS NODIFER*, *A. Bell*, MS. 2nd Sup., Tab. III, fig. 4 *a*, *b*.

*Locality.* Red Crag, Waldringfield.

The specimen here represented is from the Cabinet of Dr. Reed, and was obtained by Mr. Alf. Bell, who had affixed to it the above name and the following description:—"Shell fusiform, volutions 5, convex, with a ridge at the section, and eight or nine rounded ribs covered with coarse spiral striæ." The specimen is much rubbed and worn, and it is doubtless derived from an older formation.

At p. 117 of my first Supplement reference is made to the name of *Fusus despectus*, Linn., which has been given in the list to the paper of Mr. Prestwich as a species new to the Crag, and also in Mr. A. Bell's list of Crag shells. I have made every endeavour to ascertain where the specimens are upon which this name has been founded, but without success. In my large series of the abundant Red Crag shell, *antiquus*, nearly every form of exterior ornament, from the very finely striated specimens to such as are ornamented with large and prominent spiral ridges, like those upon *F. despectus* ('Ency. Meth.,' pl. 426) may be seen; but this latter shell in the recent state has apparently a slightly curved outer lip, and this variety I have not seen from the Crag. *Fusus tornatus*, Gould, is another proximate form, but in this the canal seems to be a little more oblique than in that of the Crag shell, and if these characters be the only differences all three might, I think, be united as varieties of one species.

Mr. Jas. Reeve has recently sent to me a specimen from the Norwich Museum which, he says, was found at Bramerton; the name of *Fusus antiquus* accompanied the shell, and in this I believe he is perfectly right. It appears to have lost the whole, or very nearly so, of the thick outer layer of the original shell, and in its present state, it somewhat resembles what I have called *Trophon altus*, so much so that if it had been *entirely* denuded by the removal of the outer shell it could not have been recognised for what it really is. So many specimens from the Crag have suffered more or less by the removal of either the outer layer of the shell, or partially so in the destruction of some of its ornamentation, that I mention this case as an instance of the liability to which palæontologists are sometimes misled, by such alterations in the condition of the shell into the adoption of new species or of new identifications.

A specimen also from Dr. Reed has recently been sent to me with a label on which is written "*Fusus antiquus*, L., Cor. Crag, Broom Pits, near Orford, from the upper beds." This is nothing but a recent specimen filled with and partially stained on the surface by the Cor. Crag material. I have not yet seen this species (*antiquus*) from the Cor. Crag. The shell which I have figured as *Trophon elegans*, is in the list of Mr. Prestwich's paper, p. 492, called a variety of *antiquus*; but so far from assenting to that

reference, I rather believe the shell to be the type of a new Genus, as suggested by Mr. Charlesworth, who figured and described it in the 'Mag. Nat. Hist.,' vol. i, p. 219, fig. 23; as it has a small apex, and a deposit of calcareous matter on the upper part of the left lip.<sup>1</sup>

MUREX REEDII, S. Wood. 2nd Sup., Tab. I, fig. 9 *a, b*.

MUREX REEDII, S. Wood. Quart. Journ. Geol. Soc., vol. xxxiii, p. 120, 1877.

*Spec. Char.* Testa fusiformi, crassa; spirā elevata; apice acutā, anfractibus septenis subangulatis; varicibus tenuibus, sublamellosis, ultimo anfractu maximo; aperturā ovatā, labro intus incrassato dentato; columellā incurvata.

*Length*, 1½ths inch.

*Breadth*, ⅔ths inch.

*Locality.* Cor. Crag? Boyton.

A specimen is among the shells sent to me by Dr. Reed, and from the perfection in which it was found, I am enabled to make a fair comparison of it with other shells of this genus in similar condition. It has prominent varices, which are not much foliated. It somewhat resembles *M. tripartita*, but is more elongated, and differs from it in not having spiral striæ like that shell, or like the long known Crag shell *M. tortuosus*, J. Sow., which is covered with large and prominent spiral striæ or ridges.

The artist's representation (figs. 9 *a, b*, of Tab. 1) might raise the idea that our present shell was obscurely striated, but I can detect no striation, though there are some faint transverse marks between one pair of varices, and as the shell is in such a fresh and unworn state it may be safely said that it never possessed striations. I have endeavoured by sending accurate drawings of the shell to Dr. Nyst, and several other Belgian conchologists, to ascertain whether anything like it was known from the Belgian beds; but they all assure me that they know of nothing like it. The canal and mouth are slightly oblique (a feature which the artist has failed in the engraving to catch), and there are six varices on

<sup>1</sup> I may mention here that a dead and bleached specimen of *Conus tulipa* was once showed to me, and said to have been found in the Cor. Crag at Ramsholt; and I have also seen a very pretty (fabricated) shell as a Red Crag fossil from Walton-on-the-Naze. This was a thick specimen of *Buc. Dalei*, beautifully ornamented with elevated ridges in a *Harpa*-like fashion, and executed in a very skilful manner, but the artist had left unobliterated a few small marks of his graving tool. These specimens are probably still in existence, and I mention them here like that of *Fusus antiquus* from Orford by way only of caution.

the body whorl and upon the preceding volution. The apex probably was sharp, but the specimen is there slightly broken. The shell is not quite so robust in proportion to its length as the artist has represented it. It somewhat resembles *M. Haidingeri*, from the Vienna beds shown in Tab. 23 of Dr. Hornes' work; but his figure differs from our present shell in having no denticulations on the outer lip, and in having the varices strongly continued down the canal.



In consequence of the unsatisfactory representation to which I have referred, I annex a cut made from a drawing which shows the characters of the shell more accurately.

The appearance of the specimen is not at all suggestive of its being a derivative; and though obnoxious to the uncertainty which I have before (p. 3) mentioned as attaching to the specimen from Boyton, the specimen presents altogether the appearance of a genuine fossil of the Coralline Crag.

*MUREX PSEUDO-NYSTII*, *S. Wood.* Tab. I, fig. 8 *a, b.*

*M. Testá elongato-fusiformi, crassá; spirá elevatá, anfractibus septenis, convexis; supernè subangulatis, spiralitè rlatè striatis; varicatis, varicibus, 7—10, tenuibus, lamellosis, compressis; ultimo anfractu equaliter longiore; aperturá ovatá, canaliculata, canali attenuato, labro intus pauci denticulato.*

*Axis*,  $1\frac{1}{8}$ th of an inch.

*Locality.* Cor. Crag? Boyton.

A perfect specimen as above represented has been sent to me by Dr. Reed, and so far as I am able to ascertain it appears to be specifically distinct from any previously described species. The shell may be described as elongately fusiform, with seven or eight convex volutions, the upper part of these somewhat depressed, giving a slight shoulder to the volutions; coarsely striated in a spiral direction, but above the shoulder these striæ do not extend: the apex was probably sharp and acute, but it is slightly broken; aperture small and ovate, and the outer lip extremely thick; and on which there were two prominent denticles, and one nearly obsolete on the lower part of the inner lip; it has a long canal, slightly curved, and open. The first two volutions appear to be smooth or destitute of marking either spirally or longitudinally.

I have compared it with specimens of Von Könen's species *Nystii*, kindly sent me by Dr. Nyst, and with others from Edegheem, in Belgium,<sup>1</sup> sent me by M. Rutot, and although it approaches that shell in several respects, it does not do so sufficiently to justify any identity with it. Nevertheless, to indicate its affinity I have assigned it the

<sup>1</sup> This deposit of Edegheem has hitherto been regarded as miocene, but it is placed by M. E. Vanden Broeck with that of Kiel and some other localities near Antwerp as oldest Pliocene "Esquisse Géologique et Paléontologique des dépôts Pliocènes des environs d'Anvers," p. 35.

above name. *Nystii* is a less tapering shell, and possesses only half the number of varices, and these more thick and prominent than those of our present shell.

The same remark in reference to the genuineness of the shell as a species of the Coralline Crag, which I have made in the case of the last described species (*Reedii*), applies to the present case.

Two imperfect specimens, or rather the larger portion of some small species belonging to this genus, were found by myself many years ago in the Cor. Crag of Sutton, and were retained in the hope that something better would turn up to enable me correctly to describe them, or to refer to some previously described species. These are shown in figs. 7 *a, b* of Tab. I, and exhibit the last volution with the aperture and its straight canal perfect; and as these constitute the principal portion of the shell, a fair idea of it may be thus formed. The specimens very much resemble *Murex Canhami*, figured in No. 14 of Tab. VII of my first supplement in their coarse spiral striations, but they have not the prominent points or shoulders to the varices which that shell possesses, and their canals are straight and narrower than that of *Canhami*. In their imperfect state I have here called them provisionally *Murex recticanalis*.

MUREX CROWFOOTII, *S. Wood*. 2nd Sup., Tab. I, fig. 15.

*Locality*. Cor. Crag, ? Boyton.

The specimen figured is imperfect, as shown by the fragment of the last whorl which remains adherent to the preceding one, but in other respects is in finely preserved condition. The cross striation, which is very thick and strong, resembles that in *M. tortuosus*, but the form of the shell is much less elongated, and the number of distinct whorls preserved would seem to indicate that, when perfect, the specimen could be only that of a much smaller shell than *tortuosus*. As it was placed in my hands by Mr. W. M. Crowfoot, to whom it belongs, I have given it under the name of *Crowfootii*, which will also serve to indicate the ownership of the specimen, for comparison in the event of any one more perfect turning up. I am informed by Mr. Robert Bell that he has obtained many specimens of *M. tortuosus* from the Coralline Crag, which confirms my belief that this species which was long known from the Red Crag only, is merely present as a derivative in that formation.

TRITON CONNECTENS ? *S. Wood*. 2nd Sup., Tab. I, fig. 14 *a, b*.

TRITON HEPTAGONUS, *S. Wood*. Crag Moll., vol. i, p. 41, tab. iv, fig. 8, 1848.

„ CONNECTENS, *id.* Supplement to Crag Moll., p. 30, 1872.

*Axis*, 1 inch.

*Locality*. Red Crag, Waldringfield.

A specimen of this genus has been sent to me by Mr. R. Bell, which he says is from



Waldringfield, that receptacle for so many derivatives; and as this shell is very rare to my researches, and the present specimen presents differences from the one previously represented, I have had it figured as above. It is doubtless derivative.

RANELLA ? ANGLICA, *A. Bell.* 2nd Sup., Tab. III, fig. 3.

RANELLA ANGLICA. *A. Bell.* Ann. and Mag. Nat. Hist., May, 1871.

*Spec. Char.* "Shell small; whorls 3, 4 (apex wanting), convex, with coarse elevated ridges on the bottom whorl, crossing the periodic growths (which are very distinct), and extending to the mouth, becoming very marked at the base; mouth angulated above, outer lip spreading towards the base, where it is sharply angulated by one of the ridges; pillar reflected; canal rather open; umbilical chink small."—*A. Bell.*

*Length*,  $\frac{6}{10}$ ths of an inch.

*Locality.* Red Crag, Waldringfield.

The only specimen of this shell which has been obtained, so far as I know, is the one now figured. It is from Dr. Reed's collection, and was described as above by Mr. A. Bell. It is not in a perfect condition, and I am doubtful of the correctness of the assignment, but have thought it best to have it figured, and give it under Mr. A. Bell's name and description. It is no doubt derived from some antecedent formation, and seems to me to resemble a good deal the imperfect specimen from the Cor. Crag, figured by me in Tab. II of my first Suppt., under the name *Murex corallinus*. There are some spiral striæ or ridges on the base or lower part of the volution, but the specimen is too much mutilated on the spire to show whether it was covered entirely with striæ. There are three or four distinct denticles on the inside of the outer lip, as in *M. corallinus*, and a few coarse ridges on the outside of this outer lip, as if the spire had also been so covered.

PLEUROTOMA MORRENI, *De Koninck.* Tab. II, fig. 6 *a, b*.

PLEUROTOMA MORRENI, *De Kon.* Desc. Coq. Foss. de Basele, p. 21, pl. i, fig. 3, 1837.

„ „ „ *Nyst.* Coq. Foss. de Belg., p. 510, pl. xl, fig. 6 *a, b*, 1843.

„ „ „ INTORTA (?), *Bellardi.* Foss. del Piedm., p. 16, tav. i, fig. 13, 1847.

*Axis*,  $1\frac{1}{4}$  inch.

*Locality.* Red Crag, Waldringfield.

The specimen as above represented is from the Cabinet of Mr. Canham, who

tells me he obtained it from the well-known phosphatic nodule pit at the above-named locality.

M. Nyst, as also M. de Konninck, appear to think the shell referred to is a species distinct from *Pl. intorta*, Broc.; and as the Belgian shell seems not to be rare, and to have been found in good preservation, probably they have good means for such determination. In 'Crag Moll.,' vol. i, tab. vi, fig. 4, I figured two specimens of which the smaller one may possibly be the same as our present shell, except that it is more elongated and has a less pointed termination, and as I am not imposing a new name I have thought it best to figure and describe our present shell which, however, much resembles fig. 13, tab i, of M. Bellardi's paper. This naturalist, however, seems to consider the shell so figured by him as only a variety of Brocchi's species.

The Waldringfield specimen is doubtless derivative, but from what formation it has come is, of course, conjectural. Considering, however, the close resemblance of the Cor. Crag shell which I have figured under the name *Fusus Waelii* to a shell which occurs at Baesele, (the locality from which De Konninck describes our present species,) it is quite possible that our present shell may be among the many yet unrecognised species of the Cor. Crag which by the destruction of this Crag have gone to fill that museum of derivatives which the Waldringfield Red Crag accumulation constitutes.

PLEUROTOMA CURTISTOMA? *A. Bell.* 2nd Sup., Tab. II, fig. 9, *a, b.*

PLEUROTOMA CURTISTOMA, *A. Bell.* Ann. and Mag. Nat. Hist., 1871, p. 7.

*Axis*, 1 inch.

*Locality.* Cor. Crag? Boyton.

The shell represented has been recently sent to me by Dr. Reed, and it was, he tells me, obtained from the above-named locality. In colour it resembles the Coralline Crag. From the description given by Mr. Bell I have referred it doubtfully to *curtistoma*, but I have not had for examination the specimen to which Mr. Bell assigned that name, which I believe has gone into the British Museum. He gives for it the locality Cor. Crag, Gedgrave. The shell now figured is closely connected with one that I figured in my first Suppt. under the name of *Pleurot. Bertrandi* (?), Addendum Plate, fig. 4, p. 179, but it has a smaller and shorter aperture. In Mr. Prestwich's List, p. 494, *Pl. curtistoma* is given as a variety of *Pleurot. attenuata*. I think, however, that our shell is distinct, as it is not attenuated and has a shorter aperture, but more and better specimens than I have seen will be necessary for certain determination.

PLEUROTOMA TERES? *Forbes*. 2nd Sup., Tab. II, fig. 7, *a, b*.

PLEUROTOMA TERES, *Forbes*. Ann. and Mag. Nat. Hist., vol. xiv, p. 412, pl. x, fig. 3.

MANGELIA TERES, *Forbes and Hamb.* Brit. Moll., vol. iii, pl. cxiii, figs. 1, 2.

DEFRANCIA TERES, *Jeff.* Brit. Conch., vol. iv, p. 362, pl. lxxxviii, fig. 5.

*Axis*,  $\frac{5}{16}$ ths of an inch.

*Locality*. Cor. Crag, Sutton.

A small and worn specimen was found by myself some years ago in the Cor. Crag of Sutton, which I have kept unfigured in the hope of obtaining another and better preserved specimen to assist in its correct determination, but without success. I now give it as above, but with a mark of doubt; and it is evidently distinct from *tereoides*, 'Supplement to Crag Moll.,' Addendum Plate, fig. 3 *a, b*. In the 'Crag Moll.,' vol. i, tab. vi, fig. 6, is figured a minute shell with a peculiar ornamentation on the young or upper volutions; this was called *Trophon paululum*, and considered as the young of a larger shell. In Professor Prestwich's paper, 'Quart. Journ. Geol. Soc.,' vol. xxvii, p. 146, this is referred to *Pl. teres*, which probably it is (see 1st Supplement to Crag Moll., p. 27). My present specimen is somewhat abraded, and shows more numerous and close spiral striæ than the recent *teres* usually presents. These in my specimen are not carried over the ribs, but this may be due to obliteration from wear; the ribs also are more prominent than in the recent shell. On the other hand, the form of the shell, and its deep and broad sinus, agree with the recent species. The striæ on the lower whorls are rather more numerous than represented by the engraver.

PLEUROTOMA GRACILI-COSTATA, *S. Wood*. 2nd Sup., Tab. II, fig. 8.

*Spec. Char.* *Testá ovato-fusiformi, ventricosá, brevispirá, acuminatá; anfractibus convexis, longitudinaliter et angustè costatis; transversim striatis; ultimo basi sulcato; columellá canalique brevi, contortis; aperturá ovatá.*

*Axis*,  $\frac{5}{8}$ ths of an inch.

*Locality*. Cor. Crag, Sutton.

The specimen figured was found by myself many years ago, but from its peculiar appearance I postponed noticing it, hoping that something better might turn up to assist in its determination. It occurred to me that the costæ or ribs which are formed by the periodical arrest of the outer lip during growth might have been originally

round and hollow, and that the upper part of them had been decorticated, and a portion consisting of the two sides of the original ribs only left, the effect of which would be to show a number of thin sharp, instead of half that number of wide and blunt costæ. The apex is sharp, the three first volutions being without riblets, and the fourth volution has 4 or 5 rounded riblets, beyond which these riblets are double in number. My specimen is not sufficiently perfect to show if there have been any spiral striæ. The outer lip is much curved and there is a large deep sinus a little below the suture; the outer lip is also sharp, without any striæ or ridges on the inside of it. My specimen resembles the figures given by M. Nyst with the name of *Pleurot. acuticosta* ('Coq. foss. de Belg.,' p. 529, pl. 42, fig. 5), but that figure is indifferent, and the description is too short to supply the deficiency. *Pleurot. incrassata* from Touraine somewhat resembles our shell, but I have not a specimen for comparison. The above name is given provisionally.

PLEUROTOMA ICENORUM, S. Wood. 2nd Sup., Tab. III, fig. 8, *a*, *b*.

PLEUROTOMA ICENORUM, S. Wood. 1st Supplement Crag Moll., p. 35.

*Locality.* Cor. Crag near Orford.

There is so much doubt and difficulty about this shell that I find it necessary to give another figure of it, from a perfect specimen in my own cabinet. My shell has a row of nodules formed at the projecting portion of the outer lip, with a row of smaller nodules adjoining the suture; thus making two rows on all but the lower volution. The two apical whorls are quite smooth and without ornament, making the apex very obtuse; differing thereby from the representation of *Pl. coronata* of Bellardi. At the base there is an umbilicus caused by a slight obliquity of the volutions outwardly. Two specimens have been sent to me from Dr. Reed's collection with the name of *Pl. umbilicata*, A. Bell, which correspond with *Icenorum*. Our shell has unfortunately had several names. In Mr. Prestwich's list, p. 145, it is called *Pleurotoma galerita*, Phil. In Mr. Bell's List of the English Craggs, p. 35, it is said to have been figured and named by Dr. von Könen as *Pl. Hosiusii* ('Mioc. Nord. Deutch. Moll.,' p. 105, taf. 2, fig. 12 *a*, *d*). These foreign species appear to me (judging from representations) to be different from our shell, which has an obtuse apex and an umbilicus, neither of which is possessed by them. The name of *Pl. semicolon*, given in Crag Moll., is also erroneous for the reasons mentioned in my first Supplement, p. 35. I would have adopted Mr. Bell's name of *umbilicata*, were it not that the shell to which I had previously assigned the name *Icenorum* is, in my opinion, the same species.

*PLEUROTOMA SENILIS*, *S. Wood*. 2nd Sup., Tab. III, fig. 2 *a*, *b*.

*PLEUROTOMA SENILIS*, *S. Wood*. 1st Supplement, p. 42, tab. v, fig. 5.

— *ARCTICA*?, *Adams*. — — p. 45, t. vi, fig. 9.

— *VIOLACEA*, *M. & A.* — —

*Locality.* Red Crag, Sutton and Waldringfield.

The original specimen, figured in my first Supplement, was very much worn, but some better preserved specimens from the Red Crag have been obtained by Mr. Canham. That which I have now figured as 2 *b* was the most perfect, and has since been lost by him, but having while it was in my hands had a drawing made of it I am enabled to give the figure 2 *b* from this. The specimen figured in Tab. V of my first Suppl. was so much rubbed that some uncertainty attaches to its identification with the shells now figured, and under these circumstances it is our present shell that I desire to distinguish by the specific name of *senilis*. The fragment, No. 9, figured by me in Tab. VI of my first Suppl. under the name of *arctica*, seems to be one of a much worn specimen of the present species. They are all derivative in the Red Crag, but may, I think, not improbably have been derived from the Coralline, though nothing identical with them has yet been obtained from that formation. Under the circumstances explained above, I have removed the name of *P. violacea* from my Synoptical list.

*PLEUROTOMA CATENATA*, *A. Bell*, MS. 2nd Sup., Tab. III, fig. 5.

*Axis*,  $\frac{9}{16}$ ths of an inch.

*Locality.* Cor. Crag, Gedgrave.

The above figure is taken from a specimen in the Cabinet of Dr. Reed, which was obtained from the Cor. Crag by Mr. A. Bell, who had assigned it the above name in MS.

There is so much uncertainty attending many identifications of the species of this genus that I prefer giving the figure of the shell with Mr. A. Bell's assignment of it to expressing any opinion of my own about it.

The shell has eight volutions, very slightly convex, indeed nearly flattened; apex obtuse; embryonic whorls smooth; there are two rows of nodules, above which is the sinus and two smaller spirally nodulous lines; base of volution covered with prominent spiral lines; aperture ovate, with a canal of moderate length; the ornamentation, though not very well defined, appears to be its only distinction. The specimen figured is the only one which I have seen, and is by no means perfect.

PLEUROTOMA PANNUS, *Basterot*. 2nd Sup., Tab. III, fig. 6.

PLEUROTOMA PANNUS, *Bast*. Foss. du Sud-ouest de la France, p. 63.

— — *Bellardi*. Monog. delle Pleur., p. 27, tav. ii, fig. 2.

— DUMONTII, *Nyst*. Belge Foss., p. 527, tab. xlii, fig. 4.

*Spec. Char.* “*P. striis transversis, numerosis, minutis; striis incrementi decussatis.*”  
—*Bast*.

*Axis*,  $\frac{5}{8}$ ths of an inch.

*Locality.* Cor. Crag, near Orford.

France: Saucats, Léognan, Dax.

Piedmont: Torino, Colli Tortonesi.

The specimen figured, which, however, is not quite perfect, was found near Orford by Dr. von Könen; and he has kindly sent me a specimen of the same species from Antwerp, which seems to correspond with our Crag shell. Mr. A. Bell has introduced this name into his list of Coralline Crag shells, so that probably several other specimens may have been found, but that in my possession is the only one from the Crag that I have seen. *Pl. catenata* of Mr. Bell strongly resembles it, and may be only a variety.

As with so many species of this variable genus, it is difficult to say whether the distinctive features which induce authors to make specific distinctions are in the present case constant; but the identification of the shell by so good a conchologist as Dr. von Könen, and the production by him of a specimen from Antwerp identical in character with our Cor. Crag specimen, gives me more confidence in the present identification than I should otherwise entertain.

The specimen figured as No. 1 of Tab. III was sent to me by Dr. Reed, and has a label attached with the name of *Borsonia prima* assigned by Mr. A. Bell, who gives for it the locality of “Red Crag, Waldringfield.” The shell looks like a deformity, and the ridge upon the columella accidental, as it is angular in form, and like a simple projection. The shell is much abraded, and appears like a mutilated specimen of *Pleurotoma turrifera*, *Nyst* (*P. turricula* of Brocchi, figured in ‘Crag Moll.’ Tab. VI). As the name *Borsonia prima* may, perhaps, be introduced into lists of shells from the Crag, I think it best to give a figure of the specimen, to enable others to judge for themselves.

*Borsonia prima*, *Bellardi*, ‘Monog. Pleurot. Foss.’ pl. iv, fig. 13, is, I think, a different shell altogether.

A specimen of *Pleurotoma* from Boyton has been very recently sent to me by

Mr. Cavell, of Saxmundham, which closely corresponds with *Pleurot. lævigata*, Phil., being quite destitute of costæ; but the shell cannot be described as "lævissima," as there are vestiges of spiral striæ remaining upon the Crag specimen. This is possibly the same as fig. 12, tab. vii, of 'Crag Moll.,' but it is distinct from fig. 15, tab. vi, of my first Supplement, which I think may be referred to *P. nebula* of Mont.

CANCELLARIA (ADMETE) AVARA ? Say. 2nd Sup., Tab. IV, fig. 5.

COLUMBELLA AVARA, Say. Gould. Invert. Massach., p. 313, fig. 197.

CANCELLARIA AVARA, A. Bell. Ann. and Mag. Nat. Hist., May, 1871.

*Axis*,  $\frac{1}{2}$  an inch.

*Locality*. Red Crag, Waldringfield.

This is another imperfect and much worn specimen from Dr. Reed's Collection, but as it has been published by Mr. Bell in his list of Crag shells as a species of that formation, I have had it figured as above. I am unable to give a full description of the specimen from its mutilated condition, but it possesses several folds or small ridges upon the columella, from which, and its general form, it seems referable to that group of the Cancellariæ to which the subgeneric name *Admete* has been given, but beyond that I can express no opinion of its identity, and I give it under the name *Avara* solely on the authority of Mr. Bell. It appears to me like a derivative. I have a very imperfect specimen of an elongated species of *Cancellaria* from the Coralline Crag, but it is too much mutilated to permit of its being even provisionally described. It does not, however, appear to have belonged to the same species as the above shell.

CANCELLARIA CRASSISTRIATA, A. Bell, MS. Tab. III, fig. 16 a, b.

*Axis*,  $\frac{1}{2}$  an inch.

*Locality*. Red Crag, Waldringfield

The figure is taken from one of two debauched specimens from the Red Crag of Waldringfield in Dr. Reed's Cabinet, which were obtained for him by Mr. A. Bell, and who has sent me the following rough note upon them:—"Specimens much worn and decorticated. There are about ten striæ on the body whorl, the most prominent being three on the most extended part of the volution, crossed by some broad obscure ribs; the outer lip is thickened inside at the top; inner lip reflected upon the pillar, showing in worn specimens an umbilical chink. The absence of teeth on the inner lip would place the shell in the section *Admete*." Whatever the specimens may prove to be, they are evidently derivative in the Red Crag.

*CERITHIUM VARICULOSUM*, *Nyst.* Crag Moll., vol. i, p. 69, Tab. VIII, fig. 3; 2nd Sup., Tab. II, fig. 15.

*Locality.* Red Crag, Walton Naze.

The figure given of this shell in the 'Crag Moll.' does not quite correctly represent the fossil found at Walton Naze, which in Prestwich's list is referred to *Cerithium reticulatum*, but which I believe is specifically distinct; the volutions of my fossil are more convex, and are not only destitute of thickened varices, but have a different ornamentation from the recent shell. I have now figured a fragment found by myself at Walton Naze; and this has decidedly convex volutions, with three spiral and nodulous ridges, and a small one at the base; moreover, these spiral ridges are not equally distributed over the whorls, there being a wider space between the upper one and the suture, than there is between the others. In *C. reticulatum* the volutions are nearly flat and have four equidistant nodulous striæ. I have therefore retained the shell under the name originally given.

*CERITHIUM GREENII?* *Adams.* 2nd Sp., Tab. IV, fig. 16.

*CERITHIUM GREENII*, *Adams.* Bost. Journ. Nat. Hist., vol. xi, p. 287, pl. iv, fig. 12.

*Locality.* Chillesford Bed, Bramerton.

Two small but very perfect specimens of some species of the genus *Cerithium* have been sent to me by Mr. Reeve with the locality of "Upper bed at Bramerton." I have a difficulty in referring them to anything previously described, and have therefore given them provisionally the above name. The shell to which they present the nearest approach is *Cerithium Greenii*, C. B. Adams, figured and described by Gould ('Invert. Mass.,' p. 279, fig. 184), but I have not the recent shell to compare with it. In 'Brit. Conch.,' vol. iv, p. 267, it is said that *C. Greenii* is the same as *Cerithiopsis tubercularis*, but my shell does not correspond with anything that I have seen of this very variable species. It does not seem possible that it can be the young of *C. tricinatum*, though it does not exceed in length  $\frac{3}{8}$ ths of an inch, for it has seven volutions, which is repugnant to its being the young of any species. The base of our very perfect specimens is quite free from striæ or markings of any kind, and the volutions, which have three nodules, are separated by a deep suture, the two forming the apex being smooth. If the shell should prove distinct from *Greenii* the name *Reevii* might be assigned to it, as the specimen was found and sent to me by Mr. Reeve, of the Norwich Museum.



CHEMNITZIA INTERNODULA? *S. Wood.* *Var. ligata*, 2nd Sup., Tab. II, fig. 11.

CHEMNITZIA INTERNODULA, *S. Wood.* *Crag Moll.*, vol. i, p. 81, tab. x, fig. 6; 1st Sup.  
*Crag Moll.*, p. 60, for normal form.

*Axis*  $\frac{6}{10}$ ths of an inch.

*Locality.* Fluvio-marine Crag, Bramerton.

The specimen here represented is in the Norwich Museum, and was sent to me by its curator Mr. Reeve. As it seems to differ so materially in form from the numerous specimens and fragments of *internodula* that I have obtained from the Cor. Crag, I have here figured it in juxtaposition with a representation (fig. 12) of one of my specimens from the Cor. Crag of Sutton. It may have been affected, like the *Littorinæ*, &c., by the brackish water, and consequently have much altered its normal form. If it be of the same species I would call it *Chemn. internodula*, var. *ligata*; and the latter might be adopted for its specific designation if the shell should prove to be specifically distinct. The only difference, however, that I can see is that the Norwich Crag shell is much less slender, the internodulation being the same. Mr. Crowfoot has sent me several specimens of this species from the Crag found in the Beccles Waterworks Well, which corresponds with the Fluvio-marine of Bramerton. These, though rather more slender than the variety figured above, are yet nearer to it than to the usual Coralline to Crag form.

CHEMNITZIA SENISTRIATA, *S. Wood.* 2nd Sup., Tab. II, fig. 20.

CHEMNITZIA SENISTRIATA, *S. Wood.* *Quart. Journ. Geol. Soc.*, vol. xxiii, p. 120, 1877.

*Spec. Char.* *Testā angustā, subulatā, elongatā, apice obtusā; anfractibus 8—9, convexiusculis, spiraliter sulcatis, vel striatis; striæ senis, latis, depressis; aperturā subquadrangulatā; columellā rectā, simplici; labro intus lævigato.*

*Axis*  $\frac{1}{4}$  of an inch.

*Locality.* Cor. Crag, Sutton.

This is the shell mentioned by me in the 'Crag Moll.,' vol. i, p. 84, as a var. of *similis* with spiral striæ, but no costæ. I now consider it as distinct and figure it under the above name. It approaches a shell called *Scalaria quadristrata* by Dr. Speyer ('Die Conch. der Casseler. Tert.,' p. 181, tab. xxiv, figs. 7, 8), but the aperture of my shell is of a different form to the one there represented, and it has more numerous striæ than that species. The striæ upon the specimen now figured are six in number, broad and rather flat, separated by a narrow line, and the volutions are very slightly convex.

*Chemnitzia similis* ('Crag Moll.,' vol. i, p. 84, tab. x, fig. 11) strongly resembles the representations of a shell called *Scalaria*? (*Pyrgiscus*) *Leunissii*, Phil., from the upper oligocene given in Speyer's work, ("Die conch der Casseler Tertiärbildungen." p. 180, tab. xxiv, figs. 10—12), but I have not been able to compare my shell with the original of this. The apex of my shell is obtuse or slightly reversed as in the shell represented by Dr. Speyer, and has ten volutions, with 12—17 upright or slightly sloping costulæ, traversed by six or seven spiral lines. The Crag shell, *similis*, though abundant, is seldom in perfection (the surface being often worn down or decorticated), and it is rather more cylindrical than the German species represented by Dr. Speyer.

SCALARIA TORULOSA, *Brocchi*. 2nd Sup., Tab. II, fig. 13.

TURBO TORULOSUS, *Broc.* Conch. Foss. Subap., vol. ii, p. 377, tab. vii, fig. 4.

SCALARIA TORULOSA, *Hornes*. Vienna Foss., p. 488, taf. xlv, fig. 13 a, b.

*Length* 1 inch.

*Breadth* 4 lines.

*Locality*. Cor. Crag?, Boyton.

A single specimen of this species has been obligingly sent to me by Dr. Reed, and he tells me he obtained it from Mr. Charlesworth, who says it was turned out of the phosphatic nodule workings at the edge of the Butley river in the Parish of Boyton, to which I have already (p. 3, footnote) referred, and its reference to a particular division of the Crag is therefore somewhat uncertain, but unless it be a specimen from the nodule bed itself (in which case it would in all probability be derivative from a formation older than the Coralline Crag), it is to that division rather than the Red that I should refer it. I have little doubt but that it may safely be referred to the fossil called as above by Brocchi; it is also present in the Vienna beds. Our specimen appears to have been a good deal rubbed (which favours its derivative origin), and the fine striæ with which it was originally ornamented are nearly obliterated. I have also received from Mr. R. Bell a fragment of this species, with a notification that it came from the Red Crag of Waldringfield. This fragment is much mutilated and abraded, and evidently of derivative origin.

SCALARIA FIMBRIOSA, *S. Wood*. Crag. Moll., vol. i, p. 91, Tab. VIII, fig. 12; 2nd Sup., Tab. III, fig. 17 a, b.

*Locality*. Cor. Crag, near Orford.

The specimen now figured presents some differences from that figured in Tab. viii

of the first volume of the 'Crag Mollusca,' in having the varices closer, and a more distinct ridge round the base of the lower whorl, which I have endeavoured to show by fig. 17 *b*, Tab. III. It agrees closely with one, rather larger, sent me by M. Rutot, of Brussels, from Kiel, near Antwerp, a bed which has, until lately, been regarded as miocene, but which M. Vandenbroeck refers to the oldest pliocene,<sup>1</sup> and there can, I think, be no doubt of the identity of the two shells.

SCALARIA GENICULATA?, *Brocchi*. 2nd Sup., Tab. IV, fig. 11.

TURBO GENICULATUS, *Broc.* Conch. Foss. Subap., p. 659, t. xvi, fig. 1.

*Locality.* Cor. Crag, Sutton.

A small fragment of a species of the genus *Scalaria* is in my cabinet, which may possibly be referred as above, depending, as I am obliged to do, upon the figure and description by Brocchi. This seems to differ from all other species of the genus in being less strongly or coarsely costulated, and in having the spiral striæ broader and flatter, with a very narrow depression between them.

This is another instance in which I regret my inability to compare my own shell with a veritable specimen of the species to which I have referred it. Brocchi describes his species thus:—"T. subulata, anfractibus subrotundatis, costellis capillaribus, varice ad utrumque latus crassiore." This thickened rib is not visible in my fragment.

TURRITELLA (MESALIA) PENEOLARIS, *S. Wood*. 2nd Sup., Tab. II, fig. 14.

TURRITELLA PENEOLARIS, *S. Wood*. Suppl. to Crag Moll., p. 53, t. iv, fig. 20.

*T. Testá turritá, elongatá; apice acutá? anfractibus 10—12 convexiusculis striatis; suturá depressá; aperturá subovatá; columellá concaviusculá; labro tenui.*

*Axis* 1 inch.

*Locality.* Cor. Crag, Sutton, and Cor. Crag?, Boyton.

The figures which I have previously been able to give of this shell have been those of fragments only, but I am now enabled to give a figure of the entire shell from one of two specimens sent me by Dr. Reed, which was obtained from the nodule workings at Boyton, but which, therefore, is of uncertain reference so far as its geological position is concerned, and may even be derivative, for it has been considerably abraded. It shows

<sup>1</sup> 'Esquisse Geologique et Paléontologique des Dépôts Pliocènes des Environs d'Anvers,' p. 35, Brussels, 1876.

the form of the aperture, which more resembles that of those species from the Lower Tertiaries (such as *Turritella sulcata* and others) which were placed in a new genus proposed by Dr. Gray, 1840, and called *Mesalia*.

The engraver has in the figure shown the specimen in too perfect preservation, for the striations on the upper whorls are, in the specimen itself, obliterated, as are those also along the central portion of the lower whorls, and the aperture also is less perfect than represented.

*TURRITELLA TAURINENSIS* (?), *Michelotti*. 2nd Sup., Tab. II, fig. 19.

*TURRITELLA TAURINENSIS*, *Mich.* Etud. Mioc. Inf., p. 84, pl. x, figs. 1, 2.

*Locality.* Red Crag, Sutton.

This imperfect specimen of some species of the genus *Turritella* has been in my possession for some years. The genus is one in which the determination of a species is most difficult from the great variation which individuals belonging undoubtedly to one species, such as those of *Turritella incrassata*, present, and out of which variation several species have been made. The present specimen seems, however, to differ so much that I think it must be distinct from any of the forms of *incrassata*. There is a difference in the thread-like arrangement of the striæ, and a greater convexity in the volutions, than in either *incrassata* or *terebra*. A shell described by Dr. Speyer, under the name of *Turritella Geinitzii*, Cassel, 'Tert. Conch.,' p. 145, tab. xx, figs. 8—12, is not unlike the one now figured, and I have little doubt that our present specimen is a derivative in the Red Crag from some bed older than the Coralline Crag. Figs. 16 and 17, Tab. II, represent varieties of *T. incrassata*, which may, I think, be referred to *T. acutangulata* and *T. subangulata*, Brocchi.

*EULIMA NAUMANNI*? *von Könen*. 2nd Sup., Tab. IV, fig. 22.

*EULIMA NAUMANNI*, *von Könen*. Marine Mittel. Oligoc., t. xi, fig. 19.

— — *Speyer*. Cassel. Tert. Conch., p. 202, taf. xxvi, figs. 12, 13, a, b.

*Axis*  $\frac{3}{16}$ ths of an inch.

*Locality.* Cor. Crag, Sutton.

A single specimen in my cabinet differs so much from any of the species of *Eulima* known from the Crag that I have referred it provisionally as above, depending upon the representation of the species given in the works of Speyer, and von Könen. So many so-called species in this genus present such trifling differences that before a correct determination can be made it will be necessary closely to compare the specimens themselves.

which, in the present case, I have not been able to do. Our present shell corresponds with the size and form of the figure given by Dr. von Könen, but not quite so much so with the figure by Dr. Speyer, who refers his shell to Dr. von Könen's species. Dr. Speyer's figure, however, shows an obsolete keel (or the vestige of a keel) at the base of the volution, which is not visible in my specimen, nor in von Könen's figure. My specimen seems to have had a very slight curvature at the lower part of the outer lip, but as it is not quite perfect this is obscure. The apex is rather obtuse, and the volutions, of which there are 7—8, are very slightly convex, giving a depression, or great distinctness to the suture.

*EULIMA HEBE*, *Semper*. 2nd Sup., Tab. IV, fig. 18.

*EULIMA HEBE*, *Semper*. Palæont. Unters., s. i, 171 (*vide* Speyer).

— — *Speyer*. Cassil. Tert. Conch., p. 203, taf. xxvii, fig. 2.

*Locality*. Cor. Crag, Sutton.

Germany : Ober-Oligocene, Nieder-Kaufungen.

The specimen figured is the only one which I have seen, and was found by myself in the Cor. Crag of Sutton. Having now been enabled to compare it with specimens from the German beds, I can assign it as above.

*EULIMA ROBUSTA*, *A. Bell*, MS. 2nd Sup., Tab. IV, fig. 17.

*Axis*,  $\frac{1}{3}$  an inch.

*Locality*. Red Crag, Waldringfield.

This shell, from Dr. Reed's Cabinet, with the above name given to it by Mr. A. Bell, has recently been put into my hands. It somewhat resembles *E. acicula* of Sandberger, figured and described by Dr. Speyer, 'Cass. Tert. Conch.,' p. 205, tab. xxvii, fig. 4, but has apparently fewer and more convex volutions, and is not so elongate and tapering as that species. The apex of our specimen is broken, and the outer lip is nearly straight, like that of *Eul. intermedia*, but it differs from that species in the convexity of the volution. It is doubtless derivative in the Red Crag.

The shell figured in my 1st Supplement (tab. iv, fig. 25) as *E. stenostoma*, Jeff., has since been so injured as to be unrecognisable, so that I am doubtful of its correct assignment, and whether it may not be the shell given above under the name of *E. Hebe*, *Semper*.

On the other hand, I have specimens from the Coralline Crag of *Eulima* differing

from *E. subulata* in the possession of a curved lip, which appears to be the only distinction from that shell upon which d'Orbigny's species of *subula* is founded. With this, and omitting, for the reason just given, *stenostoma* from the category, the following ten species of what I refer to the genus *Eulima*, with the exception of the derived *robusta*, have formed part of the Crag fauna, one of them, the doubtful *similis*, belonging to the newer or Red division only.

It must be confessed that some of these species are separated upon distinctions such as in more variable genera are considered only of varietal importance. Continental conchologists seem to consider the form of the outer lip as a good auxiliary character for separation, but I am unable to say if this be one on which a safe reliance can be placed. Shells of this genus are of a porcellaneous structure and opaque, the lines of increase being invisible.

1. *Eulima polita*, *Linn.* Crag Moll., vol. i, p. 96, tab. xix, fig. 1 *b*. Curved outer lip.
2. — *intermedia*, *Cantraine*. Crag Moll., vol. i, p. 96, tab. xix, fig. 1 *a*. Lip nearly straight.
3. — *subulata*, *Donovan*. Crag Moll., vol. i, p. 96, tab. xix, fig. 3. Straight outer lip.
4. — *subula*, *D'Orbigny*. Prodr., iii, p. 34, No. 478. Curved outer lip.
5. — *bilineata*, *Alder*. Sup. Crag Moll., p. 66. Spirally coloured.
6. — *similis*?, *D'Orb.* Sup., Crag Moll., p. 65, tab. vii, fig. 6. Spire inflected.
7. — *glabella*, *S. Wood*. Crag Moll., p. 98, tab. xix, fig. 2. Apex obtuse.
8. — *Hebe*, *Semper*. 2nd Sup., Tab. IV, fig. 18. Elongated aperture.
9. — *Naumanni*?, *von Könen*. 2nd Sup., Tab. IV, fig. 22.
10. — *robusta*, *A. Bell*. 2nd Sup., Tab. IV, fig. 17. Convex volution.

*Rissoa costulata*, *Alder*. 2nd Sup., Tab. IV, fig. 23.

*Rissoa costulata*, *Alder*. Mag. Nat. Hist., xiii, p. 324, pl. viii, figs. 8, 9.

— — *Forb. and Hanl.* Brit. Moll., vol. iii, p. 103, pl. lxxvii, figs. 4, 5.

— — *Jeffreys*. Brit. Conch., vol. iv, p. 35, pl. lxxviii, fig. 1.

*Locality.* Cor. Crag, Sutton.

A single specimen has very recently come into my hands from Dr. Reed, with the above-named locality given to it by Mr. A. Bell. This resembles in form *Rissoa crassistriata* of 'Crag Moll.,' vol. i, tab. xi, fig. 13, but that shell has large and coarse spiral striæ, of which the present species is destitute.

*Rissoa parva*?, *Da Costa*. 2nd Sup., Tab. IV, fig. 21.

*Locality.* Cor. Crag, Sutton.

The specimen figured is from my own cabinet, and was found by myself. It appears to answer to this species, though from being unique and imperfect, I give it with doubt.

*RISSEA RETICULATA*, *Mont.* 2nd Sup., Tab. IV, fig. 19.

A specimen with this name has been sent to me by Dr. Reed, which seems to correspond with the recent British shell to which I have, as above referred, it. The shell so called in 'Crag Mol.,' vol. i, p. 163, tab. i, fig. 5, has been the subject of a criticism not easily to be understood (see 1st Suppt., p. 73). I have therefore had the present specimen figured, which is a more elongated form.

*HYDROBIA OBTUSA*, *Sandberger.* 2nd Sup., Tab. IV, fig. 7.

*LITTORINELLA OBTUSA*, *Sandb.* *Conch. de Mainz Tertiarb.*, s. 81, taf. 6, fig. 8 a—c.

*Length* 1 line.

*Locality.* Fluviomarine Crag, Bramerton.

Several specimens of this little shell have been sent to me by Mr. Jas. Reeve, who tells me that he found them at Bramerton, and was doubtful about their correct assignment. The one figured is the longest of the series, and seems to approach very close to the figure of the shell given by Dr. Speyer from the middle oligocene of Germany, under the name of *Bithinia obtusa*, Sandberger; and as the specimens show the same thickened lip as does his figure, I have ventured to identify them with it. As the specimens are in good condition, and the allied species *subumbilicata*, *thermalis*, and *ventrosa*, which are abundant and in very perfect condition at Bramerton, are also figured by Dr. Speyer (under the name *B. acuta*, Drap.) from the same middle oligocene beds, I am disposed to regard the species now under description as having lived in the waters of the Crag Period equally with *subumbilicata*; and not to be of the derivative origin of the shells described in the postscript.

*NATICA (AMAUROPSIS) JAPONICA*?, *A. Adams*, M.S. 2nd Sup., Tab. III, fig. 11.

*Axis*  $\frac{1}{4}$  of an inch.

*Locality.* Red Crag, Butley.

A small specimen is among the shells sent to me by Dr. Reed, with the above name attached (by, I believe, Mr. A. Bell, who obtained it from Butley).

It is in good preservation and I have had it here figured, but whether it be the shell above

named I must leave for further observation and more specimens to determine. It much resembles a small form of *Natica helicoides* (*Islandica*, Gmel.), 'Crag Moll.,' vol. i, p. 145, tab. xvi, fig. 3, and may possibly be the young of that shell, though it seems to be more elongated, and to possess a more elevated spire and more pointed umbo; the present specimen is quite free from striæ of any kind, and it does not appear to have lost any of its outer coating, which is so common in specimens of *Naticæ* from that locality, and this is perhaps in favour of its being distinct. I have not been able to see the living shell to which Mr. Bell has referred it, which, on the label appended to our present specimen, is called "undescribed." The volutions in this specimen are convex, and between them is a deep and depressed suture, like that upon *helicoides*, but our present shell has a very distinct umbilicus. Mr. Bell tells me he has seen the young of *N. helicoides*, and that our present shell differs from it. I have put a mark of doubt against the present name, as I have not much confidence in the above assignment.

NATICA GROENLANDICA ?, *Beck.*, var. *declivis*. 2nd Sup., Tab. III, fig. 12 *a—b*; Crag Moll., vol. i, p. 146, Tab. XII, fig. 5; 1st Sup., p. 75.

*Axis*  $\frac{7}{8}$ ths of an inch nearly.

*Locality*. Red Crag, Butley.

The shell now figured differs so materially from all the Crag *Naticæ* that I have been at a loss to what it should be referred. Its elevated spire almost brings it into what has been generically called *Amauropsis*, but as I believe it to be a true *Natica* I have preferred to give it here simply as a very abnormal form of some known species of that genus; and as *N. Groenlandica* seems to answer to it in respect of the more reliable characteristics upon which the species of *Natica* have been separated, and is withal a variable species, it is to this that I provisionally assign it as a variety (*declivis*). I am reluctant to assign new specific names on the evidence of a solitary specimen where the distinction of it from any other known form is not clear, but if further specimens of this shell should be found, then I think it might be regarded as a new species under the name *declivis*.

NATICA TRISERIATA ? *Say*. 2nd Sup., Tab. III, fig. 14, *a—b*.

NATICA TRISERIATA, *Say*. Journ. Acad. Nat. Sci., v. 211 (*vide* Gould).

— — — Gould. Invert. Massachusetts, p. 233, fig. 165.

*Axis* 1 inch.

*Locality*. Red Crag, Butley.



The specimen figured seems to be intermediate between *Natica sordida* and *Natica Alderi*, approaching rather nearer to the latter than the former, but to neither does it strictly accord, having the form and nearly the size of *sordida*, but without its depression upon the upper portion of the volution. It is also rather more elongated than either, while the left lip is more extended than in *Alder*i, but rather less so than *N. sordida*. The shell is strong and nearly ovate, the contour showing but very little depression between the volutions, which slopes from the small and pointed apex. The exterior is smooth with simple lines of growth. As the specimens maintaining these characters are not rare I have ventured to refer them as above, though they bear a resemblance to *Natica hemiclausa*, a shell very abundant in the older part of the Red Crag at Walton Naze, but this latter has the umbilicus covered by the left lip in specimens that are full grown.

*Natica* are extremely abundant in the Butley bed, in association with the various peculiar and northern species of mollusca, which distinguish that newer portion of the Red Crag from the older or Walton portion, and their generally decorticated condition, in which the specimens which I refer to *triseriata* participate, increases the difficulties which attach to their specific separation.

I have not the recent species for comparison, and in making my reference to it my dependence is upon the figure and description given by Gould. The coloured markings which induced that author to give to it its name have disappeared in the Crag fossil, if they ever were present. There is also a resemblance between our fossil, and *Natica immaculata*, Totten, but this Mr. Jeffreys refers to *N. Alderi*, to which species I think the present fossil does not belong.

In 'Crag Moll.,' vol. i, p. 144, I said, when speaking of *Natica varians*, "It appears to be quite distinct from *Natica hemiclausa*, and it agrees in most of its characters with *N. varians* from Touraine." I am still of the same opinion. In Mr. Prestwich's List, p. 144, *N. varians* of the Cor. Crag is referred as a variety to *N. cirriformis*, but *N. cirriformis* is there referred to *N. sordida*. In Mr. A. Bell's List of the Lower English Crag, *N. varians* of the Crag is considered as *N. helicina*, Broc. The same shell is by M. Nyst figured as *Natica hemiclausa*, Sow. These conflicting opinions afford a proof of the perplexity in which those who study fossil mollusca become involved when occupied with this genus.

I have in Tab. III, fig. 7 *a—b*, given the representation of another specimen of this genus from the Coralline Crag near Orford, which is in Mr. Cavell's collection. This seems to differ materially from the shell which I have figured as *N. helicina* from the Red Crag of Walton Naze ('Sup. Crag Moll.,' p. 74, fig. 8 *a, b*), as it possesses a large and deep umbilicus, and although the front of the shell shows a depression at the suture, there is remaining a small portion of shelly matter, which if continuous would cover this deep suture entirely, and indicate that it possessed this covering feature, which is wanting in *N. helicina*.

Being a solitary specimen and surrounded by this uncertainty I have not ventured to assign it as a new species, preferring to give it as a variety, *heliciformis*, of *N. helicina*; but should more specimens occur maintaining its characters that varietal name might be assigned to it specifically.

In Tab. IV, fig. 12, of my first Supplement, is represented a specimen under the name of *N. proxima*, S. Wood, and at p. 74 of the same Supplement, the shell so represented is referred to the species figured in Tab. XVI of my original work under that name. As, however, the specimen in question does not show the depression on the upper part of the volution, and seems to be identical with the shell above given as *N. triseriata*, this reference was, I now consider, erroneous; and the figure should be regarded as one of the last-named species.

AMAURA HESTERNA, S. Wood. Figured in the margin.

*Axis.*  $\frac{1}{4}$  of an inch.

*Locality.* Crag, Boyton.

*Spec. Char.* *Testá turritá, elongato-conoideá, nitidá, glabrá; apice obtusá et depressá; anfractibus convexiusculis 5—6; suturis distinctis; aperturá brevi pyriformi: labro acuto simplici.*

Mr. Robert Bell has sent me a specimen, but without a name, which he says came from Boyton, and which appears to belong to the same genus as the specimen figured in my first Supplement under the name of *Amaura candida*, Tab. I, fig. 3, from the Red Crag of Butley, and of which a very perfect specimen was also obtained by Mr. Crowfoot from the locality of Boyton. This latter specimen, however, was stained with the Red Crag colour as much as was the Butley specimen, and undoubtedly belongs to the Red Crag. The specimen I am now describing, however, though evidently of the same genus, is not only specifically different from *candida*, but is unstained with any red colour, for it is polished and nearly colourless. It has the two apical volutions shallower and more depressed comparatively to the others, the suture distinct and somewhat deep, the aperture elongately ovate, terminating acutely at the body of the volution, the outer lip sharp and simple, with a small but distinct umbilicus, and the body whorl occupies more than half of the entire shell.



*Amaura hesterna*, S. Wood,  
enlarged  $\frac{1}{2}$ .

This and *candida* are the only species of the genus at present known to me. Their generic character is particularly indicated by the uppermost whorls that succeed the apex being unlike those which follow them, for instead of maintaining the proportions with which the shell commences to grow, the whorls increase in depth far beyond the proportions due to the increasing size of the animal, so that the angle of volution becomes greatly diminished. In fact, the Mollusc appears to begin life under the form of *Natica*,

and, after the growth of two whorls, to change its form so as to produce a shell quite unlike the oblate form of *Natica*, and of a more cylindrical shape. Our present shell is much more tapering than *candida*, and it possesses also one more whorl than the Red Crag specimens of that species, though it has only half their linear dimensions. It therefore seems to be a full-grown shell.

ADEORBIS ? NATICOIDES, *S. Wood*. 2nd Sup., Tab. III, fig. 13 *a, b*.

*Diameter*,  $\frac{1}{10}$ th of an inch.

*Locality*. Cor. Crag, Sutton.

A small shell has been in my hands for many years, found by myself in the Cor. Crag of Sutton. This has always much perplexed me, and it remained in my cabinet unfigured and undescribed from the idea that it might be the young or embryo condition of some larger species, and in the hope that I might obtain something further to assist in its correct determination. Not having succeeded in this, I now figure the specimen as above. I have a large number of very small specimens of several species of *Natica*, and have broken up many of them with the expectation that I might produce something that would show a keel round the umbilicus similar to the one in my present specimen, but without success. There is a large umbilicus in some species of *Natica*, but in none can I find any ridge around this great opening such as the shell now figured presents. Two very anomalous shells, having large umbilical openings surrounded by a keel, have been figured by the late M. Deshayes, viz. *Lacuna mirabilis*. 'An. du Bas. de Par.,' vol. ii, p. 372, Pl. XVIII, figs. 1—4, and *Sigaretus problematicus*, vol. iii, p. 90, Pl. LXIV, figs. 7—9; but neither of these correspond to our present specimen. There is also the living British species, *Lacuna pallidula*, which possesses a somewhat similar keel round an open umbilicus; but our shell has a distinct ridge or keel *within* the umbilical aperture, of which no species of *Lacuna* that I have examined shows any trace.

*Delphinula trigonostoma*, 'Bast. Bord. foss.,' p. 28, Pl. IV, fig. 10 (which I had given as a synonym to *Adeorbis subcarinata*, but I believe erroneously), is perhaps the nearest approach to my shell. I feel that the reference of the shell is very doubtful, but I give it to draw the attention of collectors.

TROCHUS ZIZIPHINUS, *Linn*. 2nd Sup., Tab. IV, fig. 20; Crag Moll., vol. i, p. 124, Tab. XIII, fig 9; 1st Sup., p. 81.

Dimensions. *Height*,  $\frac{1}{13}$ th inch.

*Breadth*,  $\frac{1}{16}$ th inch.

*Locality*. Cor. Crag, Sutton.

The present shell is from the collection of Mr. Canham, who tells me he procured it from the lower portion of the Cor. Crag at Sutton, and I have figured it in consequence of its unusual size. This shell was originally figured in Min. Conch under the name of *T. lævigatus*, and figured under that name by Nyst from the Belgian beds. In my catalogue (1842) I called it *pseudo-ziziphinus*; from its resemblance to the living *ziziphinus*, and in the first vol. of Crag Moll. gave it as identical with that shell. It appears to be identical in ornament (though not in form, being less tapering), with a specimen from the Sicilian beds in my cabinet. This is probably the same as the shell living in the Mediterranean called *conulus*. I have many Crag specimens, smaller than the one figured, in which the exterior with its ornamentation is in perfection; and this so agrees with that in *conulus*, that if our Crag shell called *ziziphinus* be only one of the living varieties of that species, I think *conulus* and *ziziphinus* should be united.

*ASSIMINIA GRAYANA?* *Leach.* 2nd Sup., Tab. III, fig. 18 *a, b*.

*ASSIMINIA GRAYANA, Leach.* Fleming's Brit. Anim., p. 275.

— — *Forb. & Hanl.* Brit. Mollusca, vol. iii, p. 70, pl. lxxi, figs. 3, 4.

— — *Jeffreys.* Brit. Conch., vol. v, p. 99.

*Locality.* Fluvio-marine Crag, Bramerton.

Two specimens have been sent to me by Mr. J. Reeve as from the "*Scrobicularia* bed at Bramerton,"<sup>1</sup> having been thought by him to be something different from *Hydrobia ventrosa*. One of these two I have here had represented, and I have referred it with some doubt as above, as it does not strictly accord with the living shell, which is obscurely angulated at the base of the last volution, like the shell of *Hydrobia ulvæ*, whereas in our present specimens the base is rounded. It differs materially from any specimen of *ventrosa* that I have seen, and has not the depressed or deep suture of *Bythinia Leachii*. In form it seems intermediate between *B. tentaculata* and *H. ventrosa*.

The shells at Bramerton being not unfrequently so distorted as to be scarcely recognisable for the species, or even genus, to which they belong, it is possible that the specimens in question are cases of this kind, so that I make the present reference with all reserve.

<sup>1</sup> This *Scrobicularia* bed at Bramerton appears to intervene between the few feet of specially Fluvio-marine Crag (4' of sect. xvi of the Introduction to my first 'Supplement') which rests on the chalk and the Chillesford bed (5' of that section), thus answering exactly to the *Scrobicularia* beds at Butley, (4''' of sect. xvii of the same Introduction) to which the fourth column of the synoptical list refers.

VALVATA CRISTATA, *Müller*. 2nd Sup., Tab. IV, fig. 8 *a*, *b*.

VALVATA CRISTATA, *Müll.* Hist. Verm., pt. ii, p. 198.

*Locality.* Fluvio-marine Crag, Bramerton.

This shell is abundant in the Freshwater deposits of Stutton, Grays, and Clacton, but I have only met with the one now figured from the Fluvio-marine Crag.

VALVATA PISCINALIS. 2nd Sup., Tab. IV, fig. 9.

*Locality.* Fluvio-marine Crag, Bramerton.

This is also very abundant in the same Freshwater deposits, but it is very rare in the Fluvio-marine Crag; it so closely resembles *Margarita helicina* that it is very difficult to distinguish the difference, and scarcely possible, except with perfect specimens; and I am doubtful whether a specimen found by Mr. Harmer at March, given by me at p. 121 of Vol. XXIII of the 'Quart. Journ. Geol. Soc.,' as *Trochus helycinus*, may not be merely *Valvata piscinalis*, since Freshwater shells occasionally occur in the March gravel.

The figure previously given of *V. piscinalis*, 'Crag Moll.,' Tab. XII, fig. 3, represents the depressed form, and I have given the more elevated one, which, when first discovered, was considered as a distinct species, and called *antiqua*.

The reference of *Margarita helicina* to the Coralline Crag made in my Catalogue of 1842 was an error.

LIMNÆA AURICULARIA, *Linné*. 2nd Sup., Tab. IV, fig. 3 *a*.

HELIX AURICULARIA, *Linn.* Syst. Nat., edit. 12, p. 1249.

LIMNÆA — *Jeffreys*. Brit. Conch., vol. i, p. 108, pl. vii, fig. 4.

LIMNÆUS AURICULARIUS, var. ACUTUS, *Forb. & Hanl.* Vol. iv, p. 171, pl. cxxiii, fig. 2.

*Locality.* Fluvio-marine Crag, Bramerton.

A single specimen, as above represented, has been sent to me by Mr. Reeve, and it is the first instance that I have met with of this species having been found in the Crag. It is, however, present in most of our newer Pliocene Freshwater beds, as may be seen in my List, 'Crag Moll.,' vol. ii, p. 307. Dr. Jeffreys gives three varieties to this species, our shell agreeing best with the one he first gave as distinct (*Limnæus acutus* in 'Linn. Trans.,' xvi, p. 373), but which he afterwards reduced to a variety. Our fig. 3 *b* was made from a recent specimen by mistake.

*LIMNÆA PALUSTRIS*, Müller. 2nd Sup., Tab. IV, fig. 2 *a*, *b*.

*BUCCINUM PALUSTRE*, Müll. Verm. Tert. et Fluv., vol. ii, p. 131.

*Locality.* Fluvio-marine Crag, Bramerton.

The shell figured and described in 'Crag. Moll.,' vol. i, p. 7, Tab. I, fig. 9, as *L. palustris* is, I think, there erroneously referred, as it more resembles the American species or variety called *elodes*, to which I would now refer it. I have received from Mr. Reeve a specimen, of which the one above referred to is a representation, and which, I think, is the true form of *L. palustris*.

*LIMNÆA PEREGRINA*, Müller. 2nd Sup., Tab. IV, fig. 4.

*BUCCINUM PEREGRINUM*, Müll. Verm. Hist., pt. xi, p. 130.

*Locality.* Fluvio-marine Crag, Bramerton.

The shell now figured is the true form of the common variety of this species. The one previously figured in 'Crag Moll.,' Tab. I, fig. 7, resembles the northern form called *L. Pingelii* by Möller, to which I will refer it. Fig. 8 of Tab. I of 'Crag Moll.,' there called *L. truncatula* (?), corresponds with *L. Holbollii*, Möller, and I have not seen the true form of *truncatula* from any East Anglian bed.

*PUPA EDENTULA*, Draparnaud. 2nd Sup., Tab. IV, fig. 6.

*PUPA EDENTULA*, Drap. Hist. Moll., p. 52, pl. iii, figs. 28, 29.

*Locality.* Fluvio-marine Crag, Bramerton.

This has been obtained by Mr. Reeve, and he tells me it is from the "*Scrobicularia* bed" at that locality.<sup>1</sup> The generic name of *Vertigo* is now given to this shell by some authors in consequence, it is said, of a difference in the animal, *Vertigo* having only two tentacles, while that of *Pupa* has four; but there is nothing in the shell to denote a generic difference, and I have therefore retained its original name. Our present shell is not rare in the newer Pliocene Freshwater beds, but it has not been hitherto given as a Crag shell, so far as I am aware.

<sup>1</sup> See note, p. 35.

MELAMPUS FUSIFORMIS, *S. Wood*, var. ELONGATUS. 2nd Sup., Tab. III, fig. 15; Crag Moll., vol. i, p. 12, Tab. I, fig. 14; and 1st Sup., p. 3, Tab. I, fig. 1.

*Locality.* Red Crag, Waldringfield.

The above specimen was obtained by Mr. Canham, and is perfect, except a slight fracture in the back, which, however, is no injury to the shape of the shell. It is more elongated than any form of the genus that I am acquainted with, but, unfortunately, the artist has not represented this character sufficiently in the present figure, which can scarcely be distinguished from the original *fusiformis*.

BULIMUS LUBRICUS, *Müller*. 2nd Sup., Tab. IV, fig. 10; 1st Sup., p. 187.

HELIX LUBRICA, *Müll.* Hist. Verm., pt. xi, p. 104.

ZUA LUBRICA, *Forb. & Hanl.* Brit. Moll., vol. iv, p. 125, pl. cxxv, fig. 8.

COCHLICOPA LUBRICA, *Jeff.* Brit. Conch., vol. i, p. 292, pl. xviii, fig. 2.

*Locality.* Red Crag, Butley.

The specimen figured is that referred to in my first 'Supplement' as found by Mr. Canham, in the Crag of Butley, and although it is not uncommon in the Freshwater deposits of Stutton, Clacton, Grays, and Copford, it is the first and only one that I have seen from the Crag; I have therefore had it figured. This shell has received several generic names, but the above having been previously used in my list of the Land and Freshwater shells in my second volume of the 'Crag Moll.,' I have not thought it necessary to alter it here.

#### POSTSCRIPT.

DURING the progress of the foregoing through the press Mr. Jas. Reeve, of the Norwich Museum, was good enough to send me a quantity of small shells, which he had extracted from the sand of the Bramerton Crag Pit. These consisted for the most part of specimens of species already figured and described, but among them were two or three which appear to me to be quite new to the Crag, if not, indeed, undescribed from any formation. These specimens are all more or less worn and imperfect, a character which is not usual with the specimens of species belonging to any horizon of the Crag in Norfolk; and I feel little doubt that they are not shells which lived in the Crag waters,

but are derivatives from some other formation. As they approach species figured in Dr. Speyer's work from the Oligocene of Cassel, in Germany, nearer than they do to any others that I can find figured and described, I suspect that they have been introduced from some Upper Eocene or Oligocene formation in North-Eastern Norfolk, through which a stream flowed which discharged into the estuary of the Fluvio-marine Crag.\* The probability of such a thing is strengthened by the circumstance that the chalk disappears below the water-line of the country immediately east of the Bramerton Crag Pit, and by the Lower Eocene having been pierced at Yarmouth and found to extend to a depth of 526 feet below the sea level.<sup>1</sup>

The specimens in question comprise—

1. *CERITHIUM DERIVATUM*, *S. Wood*. Figured in margin.

*Locality.* Fluvio-marine Crag, Bramerton.

Two specimens of this species were among the shells sent by Mr. Reeve. One of these was so much worn and mutilated as to be recognisable with great difficulty, but the other, which is that represented in the zincograph, is in tolerable condition; for though it has lost its apex, that is a thing not unfrequent with fossils of this genus, even where no suspicion of derivation attaches to them, and the surface is but little worn. It resembles the representation given by Dr. Speyer of *Cerithium Descoudresi*, from the Upper Oligocene, 'Cassel Tert. Conch.,' Taf. xx, fig. 2 *a, b*; but his figure shows six distinct transverse or spiral lines, whereas the Bramerton specimen shows but four on the lower, and not so many on the upper whorls. With that distinction I have been unable to refer the specimen to Dr. Speyer's species, but as the number of transverse lines in this genus is not a constant character, it may, nevertheless, belong to it, and further specimens would determine that question. I have accordingly assigned to it provisionally the above name in order to distinguish its derivative origin. The specimens will be preserved in the Norwich Museum.



*Cerithium derivatum*, *S. Wood*,  
enlarged 2.

2. *ODOSTOMIA? DERIVATA*, *S. Wood*. Figured in margin.

*Locality.* Fluvio-marine Crag, Bramerton.

Several specimens of this shell were among the quantity already mentioned as sent

<sup>1</sup> Prestwich, in 'Quarterly Journal of the Geol. Soc.,' vol. xvi, p. 450.



me by Mr. Reeve ; but all of them were in a more or less mutilated condition. One of the best preserved of them is represented in the accompanying zincograph.



*Odostomia derivata*, S. Wood,  
enlarged  $\frac{1}{2}$ .

The shell much resembles the figure of *Actæon levisulcatus* of Sandberger (Nos. 4 and 5 of Taf. xxxiii of Dr. Speyer's 'Cassel Tert. Conch.'), a species of the Upper and Middle Oligocene of Germany ; but as neither the apex nor the mouth of any of the Bramerton specimens are perfect, I do not feel sufficient confidence in their identity to refer them to Sandberger's species, and have, therefore, given them under the above name provisionally. The shading in the figure being effected by coarse lines gives the erroneous idea of the shell being covered with fine vertical lines. It, however, possesses only the strong horizontal or spiral striæ shown in the figure.

Besides the above there was a single specimen of an *Odostomia*, which I am unable to refer to any Crag species or to any living British form ; but it is too much worn for me to venture to describe it as a new species. It is about an eighth of an inch in length, and in its present state is free from striæ. It is probably, like the foregoing, a derivative from some older formation. There were also among the specimens fragments of the hinge portion of a small bivalve resembling the figure of *Siliquaria parva*, Speyer ('Ober. Oligocan Tert. Detmold,' p. 33, Taf. iv, fig. 2), but they are too imperfect for correct recognition. There was also among them an imperfect specimen of a minute *Actæon*, which, I think, may be perhaps *A. Philippii*, Koch and Wiechmann (Die oberoligoc. Fau. des Sternberger Gesteins in Meckl., Abth. s. 7, Taf. i, fig. 3 a—c, represented by Speyer in Taf. xxxiv, fig. 1—3 of his work on the 'Cassel Tertiaries.') It resembles that species in form ; and possessing four complete whorls, though only one eighth of an inch in length, it can hardly be the young of either of the Crag species *Noæ* and *tornatilis*. As, however, I could not under a magnifyer detect the peculiar pitted marks which separate the striations in *A. Philippii*, I have not ventured so to assign it. Among the specimens there was also one of *Rissoa proxima*, Alder, which, though it has lost the upper whorls, is otherwise well preserved, and on the authority of it I have introduced that name into the Fluvio-marine Crag column of the synoptical list. These specimens also will be preserved in the Norwich Museum.

## BIVALVIA.

*ANOMIA STRIATA*, *S. Wood.* 2nd Sup., Tab. VI, fig. 3 *a—f*; *Crag Moll.*, vol ii, p. 11, Tab. II, fig. 3; 1st Sup., p. 100.

*Diameter.*  $1\frac{7}{8}$ ths of an inch.

*Locality.* Cor. Crag, Sutton and near Orford.

In my figure and description of this shell in the 'Crag. Moll.,' above referred to, the exterior only is represented. I now give, therefore, one of the interior of a specimen of similar magnitude, and also a separate fig. (3 *c*), representing the thickened portion of the lower valve, which resembles what I erroneously figured in 'Crag. Moll.' (vol. ii, Tab. XXXI, fig. 24), as possibly the internal shell of *Aplysia*. The lower valve of *Anomia* is very thin, except the ridge, which is represented in fig. 3 *d*, which, therefore, is the only part of this valve usually found; but fig. 3 *e* represents a perfect specimen of this valve, showing the opening for the byssus close to the connecting ligament.

Fig 3 *f* represents a small specimen of the upper valve from the Coralline Crag of Sutton, which shows that the shell in its young condition is perfectly free from striæ, these appearing when it is a little further advanced in life. This is the only specimen out of many hundreds that I have obtained from the Cor. Crag in which this feature is shown.

*OSTREA UNGULATA*, *Nyst.* 2nd Sup., Tab. V, fig. 7 *a, b*; *Crag Moll.*, vol. ii, Tab. II, fig. 1 *a*.

*OSTREA UNGULATA*, *Nyst.*, var. A. *Coq. Foss. Belg.*, pl. xxxiv, fig. 1.

*Locality.* Cor. Crag, Ramsholt.

I have here given another figure of the *Ostrea* occurring in the Coralline Crag, which was in the 'Crag Mollusca' referred by me to *edulis*, and of which a specimen with the two valves united is represented in fig. 1 *a* of Tab II of vol. ii of that work. I

am now inclined to think that this form is so far distinct from the common *edulis* that it should be separated from it. The *O. edulis* of our coasts has the lower valve always more or less covered with imbricated radiations, of which the Cor. Crag shell is destitute, or on which, at least, they are obsolete or nearly invisible. The common form of our edible Oyster has not come under my observation, either from the Coralline or from the Red Crag. Figs. *a* and 2 *b* of Tab. II, 'Crag. Moll.,' may possibly be the immature state of *O. princeps*. Our edible Oyster is described in 'Brit. Conch.,' vol. ii, p. 38, as having the "hinge-line narrow and nearly straight," "lateral edges (especially of the flat valve) finely crenulated or notched on the upper part;" but the Cor. Crag shell is destitute of these, and the depression left by the connector is greatly incurved; I have, in consequence, had the outside of the lower valve, as well as the place of the connector figured.

The Cor. Crag shell is very thick and ponderous; and in that respect it resembles the more southern form of *edulis*, which Lamark described as a species under the name of *Ostrea hippopus*. It, however, corresponds better with the Oyster from the Antwerp beds, which is figured by M. Nyst under the name *ungulata*, var. A.

M. Nyst says of this shell (p. 326 of his work), "La var. A est plus bombée. Les sillons longitudinaux ont entièrement disparu sur les deux valves," but in his figure he has represented these "sillons" (radiations) obsolete or obscure, like they are on our Cor. Crag. shell. He gives the localities of *O. ungulata* as Anvers and Bognor, but does not specify the special locality for var. A. The form in his pl. xxiv, fig. 1, is, however, probably *O. Bellovacina* from Bognor, while var. A is presumably from Anvers; and on that assumption I have referred our Crag. shell to it, for it is certainly not the Eocene *Bellovacina*.

In the ever recurring difficulty as to whether shells in the Red Crag belong to that formation, or are only derivative in it, it is impossible to say whether this shell, of which specimens have occurred in the Red Crag, belongs to the age of that Crag or not; but I have not met with the true form of the British *O. edulis* in the Red Crag.

I do not think now that the shell figured in my first Supplement, Tab. VIII, as *Ostrea plicatula* is the same as the shell here figured as *ungulata*.

MYTILUS EDULIS, var. GALLOPROVINCIALIS. 2nd Sup., Tab. VI, fig. 9.

MYTILUS GALLOPROVINCIALIS, Lam. An. Sans. Vert., t. vii, p. 46.

Phil. Moll. Sic., vol. ii, p. 53, t. vi, figs. 12, 13.

Locality. Red Crag, Sutton.

The specimen of this peculiar form, above figured, has been obtained by Mr. Edward Moore, of Woodbridge, from the Red Crag as above.

MYTILUS EDULIS, var. UNGULATUS. 2nd Sup., Tab. VI, fig. 9 *b*.

MYTILUS UNGULATUS, *Linn.* *Syst. Nat.*, p. 1137.

*Locality.* Cor. Crag? Boyton.

The present figure, *ungulatus*, represents a specimen obtained by Mr. Charlesworth, now in the cabinet of Dr. Reed; this is said to be from Boyton, and from the colour of the specimen, it most probably came from the Lower or Cor. Crag of that locality. These two very different forms of this genus, *galloprovincialis*, and *ungulatus*, are now generally admitted to be only variations of our common edible mussel, and I have introduced them to show that they lived in the Crag Sea. They were both figured by Dr. Jeffreys in the 'Mag. Nat. Hist.' for 1859, and at p. 10, *ungulatus* is there described as an "unquestionably distinct species;" but in his later work, the Brit. Conch., they are considered as varieties of *edulis*, in which opinion I coincide. Fig. 20, Tab. II, of 'Woodward's Geol. of Norfolk' is another form of this variable species.

PECTUNCULUS PILOSUS, var. INSUBRICUS. 2nd Sup., Tab. VI, fig. 4 *a, b*; Crag. Moll., vol ii, Tab. IX, fig. 1 *d*.

ARCA INSUBRICA, *Broc.* *Conch. Foss.*, sub. ap., p. 492, tav. xi, fig. 10 *a, b*.

*Locality.* Cor. Crag, Sutton and Ramsholt.

When figuring the shells of this genus in 'Crag Mol., vol. ii, tab. ix, I gave a representation (fig. 1 *d*) of what I considered as an elongated variety of *P. glycimeris*, but this has since been given as a distinct species from the Crag, by Mr. A. Bell, as *P. insubricus*. I have therefore now given a figure of its interior, and I am unable to perceive any differences in this shell which justifies its separation from the general thick solid form which has been called *pilosus*, beyond its slightly more elongated form, and this may be connected with the more laterally extended form, common to *pilosus*, by individuals partaking more or less of this elongated character. The recent shell called *P. violacescens*, presents precisely the same form, with hinge and denticles the same. Fig. 5 *a* of Tab. IV is one of the laterally extended forms of *P. glycimeris*, from the Coralline Crag of Sutton, obtained by myself. Fig. 5 *b* is that of a specimen of my own from the Cor. Crag of Sutton, which seems to agree with that figured by Brocchi, 'Conch. Fos. Sub-Ap,' p. 483, Tab. II, fig. 8, under the name of *nummarius*. Fig. 4 *b* represents the inner lining of one of my specimens which separated itself; and as it corresponds with a figure given by Phillippi, 'En. Moll. Sic.,' Vol. II, Tab. XVIII, fig. 10 *a, b*, I thought it best to have it here figured.

NUCULA TURGENS, *S. Wood*. 2nd Sup., Tab. V, fig. 6 *a*, *b*.

*Spec. Char.* *N. testá ovato-rotundatá, ventricosá, tumidá, partim lævigatá et partim concentricè costulatá; margine dorsali et ventrali convexiusculá; margine intus denticulatá.*

*Diameter*  $\frac{3}{8}$ ths of an inch.

*Locality.* Red Crag, Waldringfield.

A single specimen of the genus *Nucula* is among Dr. Reed's specimens, kindly sent to me for examination, which I have here had represented; it has attached to it the name of *N. nucleus*? var. I think, however, it cannot be referred to that species, which is much less inflated, and comparatively longer. The two valves are closely united, and cannot be separated without endangering the integrity of the specimen. The shell to which it seems to approach the nearest, from its tumidity, is *N. sphenoides*, Edwards, an Eocene species, but that shell differs in shape, being more angular and elongated. Our shell may be described as small, roundedly triangular, and very tumid, margin crenulated (the margins, though the valves are adherent, disclosing this). The exterior, which has been much rubbed, is smooth on the part nearest the umbo, but deeply ridged on the part nearest the margin, and these ridges do not appear to be the result of decomposition. Mr. Hancock has figured and described a shell under the name of *N. inflata*, 'Ann. and Mag. Nat. Hist.,' 1846, p. 333, pl. v, figs. 13, 14, and this, Mr. Hanley says, in his 'Monog. of the Nuculidæ' (p. 34, figs. 115, 116) is the same as *N. tenuis*, Möller (as he has determined from the examination of his specimen), but as this latter has a smooth margin and is more transverse than our present shell I am not able to refer the latter to it, and have therefore given to it provisionally a new name.

It may not improbably be a derivative specimen.

ARCA TETRAGONA, *Poli*. 2nd Sup., Tab. VI, fig. 8 *a*, *b*; Crag. Moll., vol. ii, p. 76, Tab. X, fig. 1; 1st Sup. to do., p. 116.

*Locality.* Cor. Crag, Sutton.

The specimen 8 *b* now figured is given merely because it is that upon which the name of *Arca nodulosa*, Müll., was introduced by Mr. A. Bell, into his list of Crag shells in the 'Proc. of the Geological Association,' vol. ii. It is now in the cabinet of Dr. Reed, and has been sent to me by that gentleman with the proposed name of *Arca puella*, A. Bell, attached. I have had a small specimen of my own finding here also represented (fig. 8 *a* of Tab. VI), which is very like it, and both, in my opinion, are specimens of *A. tetragona*, with coarser ornament than usual.

CHAMA GRYPHOIDES, *Linn.*, var. GRYPHINA. 2nd Sup., Tab.V, fig.1 *a*, *b*, *c*.

CHAMA GRYPHOIDES, *Linn.* Crag. Moll., vol. ii, p. 162, tab. xv, fig. 8.

*Locality.* Red Crag, Waldringfield.

The specimen here represented is from Mr. Canham's collection. This I have referred as above, believing it to be merely a reversed form produced by the adherence of the right valve instead of the left. The present specimen is from the Red Crag, but probably only so by derivation from the Coralline.

LUCINA CRASSIDENS, *S. Wood.* 2nd Sup., Tab. V, fig. 4 *a*, *b*.

*Diameter*,  $\frac{5}{8}$ ths of an inch.

*Locality.* Red Crag, Waldringfield.

This is from Dr. Reed's cabinet; and it is in all probability a derivative from some anterior formation. The specimen seems to be not only full grown, but probably an old individual with a thickened interior. It has a prominent umbo, with a very broad and thickened hinge area. I thought at first sight that it might have been a specimen of *Lucina uncinata*, an Eocene species, which has an elevated dorsal margin, but that shell is much larger when full grown, and it has not the broad hinge of our shell. The present specimen is quite smooth on the exterior, but it has probably been much rolled and abraded.

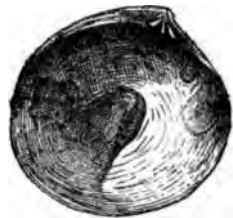
Another specimen of this genus, from the nodule workings in the Red Crag, which, from having both valves adherent and filled with indurated material, is clearly also a derivative, was given to me by Mr. Charlesworth many years ago, and this I believe to be *Lucina crassa* from the Kimmeridge Clay.

LUCINOPSIS LAJONKAIRII, *Payr*, var. SUBOBLIQUA. Figured in margin.

*Locality.* Cor. Crag, Ramsholt.

A single valve of this species was found by myself some time ago, which in the outline differs so widely from all other specimens I have seen, that I have had it

represented. It is suborbicular or slightly oblique, subequilateral, and much flatter than the ordinary form: the exterior is covered with the same radiating fine striæ, decussated by lines of growth, as are present on the ordinary form, with which also its dentition is identical; and it possesses the same impression or siphonal scar which is characteristic of *L. Lajonkairii*. As the differences presented by the present shell consist only in its greater flatness and different outline, I have regarded it as an accidental variety only; but if a series should be obtained maintaining these characters, they might be regarded as of specific value, and the above name, *subobliqua*, then be assigned specifically.



*Lucinopsis Lajonkairii*, Payr.  
var. *subobliqua*, S. Wood.

*ASTARTE MUTABILIS*, S. Wood. 2nd Sup., Tab. VI, fig. 1.

*ASTARTE MUTABILIS*, S. Wood. Crag Moll., vol. ii, p. 179, tab. xvi, fig. 1.

*Diameter*, 2 inches.

*Locality*. Cor. Crag, near Orford.

I have had the present specimen figured for its great size, showing the margin without crenulations. This freedom from crenulation has always been considered by myself a distinguishing mark denoting that the animal which formed the shell had not arrived at maturity, and I can see no reason against such a supposition. This is as large as the largest of any specimens I have of this species, and larger than many which have the margin ornamented with crenulations. So far as I have studied the shells of the genus *Astarte*, I have always found the young or immature specimens of a species, that is decidedly crenulated when full grown, to be without that peculiarity.

In the plate of the "Arctic Shells," in Sir E. Belcher's 'Arctic Voyage,' are the figures of two species of *Astarte*. Fig. 7 *a, b*, of Tab. XXXIII, is named and described as new under the name of *A. Richardsoni*. This is stated by Dr. Jeffreys, in 'Ann. and Mag. Nat. Hist.' for 1877, p. 234, to be the same as *A. crebricostata* of Forbes, but unless the figure given in Belcher's work be erroneous, it seems to me to be the common form of *Astarte borealis*, such as occurs in the East Anglian beds; while fig. 5 *a, b*, of the same Tab., called *A. fabula*, answers to the shell figured and described from the Red Crag as *A. crebrilirata*, 'Crag Moll.,' vol. ii, p. 184, tab. xvi, fig. 2, and which would thus appear to be living in the Arctic seas.

*MACTRA PONDEROSA* ? *Stimpson*. 2nd Sup., Tab. VI, fig. 2.

*MACTRA PONDEROSA*, *Stimpson*. Shells of New England.

*Dimensions*, 2 inches by  $1\frac{3}{4}$ .

*Locality*. Red Crag, Waldringfield.

A specimen of *Mactra* has been sent to me by Dr. Reed, with the above name and locality attached by (I believe) Mr. A. Bell. It is unknown to me either as recent or fossil, but it deserves a representation. Its form and appearance much resemble a large specimen of *M. solida*, and is different from *M. solidissima* (*M. ovalis*, Gould), 'Inv. Massach.,' p. 53, fig. 32, but it is not very far removed from it.

*MACTRA ARCUATA*, *J. Sow*. Crag Moll., vol. ii, p. 243, Tab. XXIII, fig. 5; 1st Sup., p. 155.

I omitted to point out in my first Supplement that this species belongs to a section of the *Mactræ*, which the late Dr. J. E. Gray proposed to distinguish as a separate genus under the name of *Spisula*, this section being distinguished by the possession of the fimbriated mark or perpendicular striation on the lateral teeth, which forms part of the diagnosis of this species given at p. 243 of the 'Crag Moll. '; and that *Mactra glauca*, of which *arcuata* is called a variety in the list which accompanies Mr. Prestwich's paper on the Crag, belongs to the other section, viz. that which is destitute of this impression.

A fragment of a full-grown shell, showing the hinge with this fimbriated mark, and which therefore seems to be one of *M. arcuata*, was obtained by my son from a band of shell fragments at the top of the Middle Glacial sand, three or four feet below the overlying chalky clay, in a well at Bealings, near Woodbridge, this seam exactly corresponding in position to that at Billockby and Hopton, from which the species given in my first Supplement were obtained.

*THRACIA PAPYRACEA*, *Poli*. 2nd Sup., Tab. VI, fig. 6 *a*, *b*.

*THRACIA PHASEOLINA*. Crag Moll., vol. ii, p. 259, tab. xxvi, fig. 2.

— *PAPYRACEA*. 1st Sup. to do., p. 156.

*Additional localities*. Chillesford Bed, Sudbourn Church Walks; Lower Glacial, Belaugh.

Dr. Reed having sent to me a specimen with the name *Thracia villosiuscula* attached,



upon which that name as a variety of *T. papyracea* had been introduced into the list by Mr. A. Bell in the 2nd vol. of the 'Proceedings of the Geol. Association,' I have had it figured as above (6 *b*), and with it one of my own from the same locality, exhibiting the ordinary form of *papyracea* (6 *a*).

*T. villosiuscula* is considered both by Forbes and Hanley and by Dr. Jeffreys as a variety of *papyracea*, as being more equilateral than the typical form of that species, but the specimen sent me by Dr. Reed is rather less equilateral than the typical form. The species itself is difficult of distinction from the young of *T. pubescens*.

I also possess a perfect specimen of this shell from the Lower Glacial sand of Belaugh.

*THRACIA VENTRICOSA*, *Phil.* 2nd Sup., Tab. V, fig. 3; *Crag Moll.*, vol. ii, p. 262, Tab. XXVI, fig. 5; 1st Sup., p. 156.

*Locality.* Cor. Crag, Ramsholt.

In the list of the Crag shells appended to Mr. Prestwich's paper, p. 141, the one I called by the above name is said to be *Thracia convexa*, W. Wood, and I have in consequence figured a specimen obtained by myself from the Cor. Crag of Ramsholt. I thought, and still think, that the differences between the Crag shell and *T. convexa* are sufficient for their being kept distinct, and the specimen now figured exhibits these differences better than that figured in my original work; they consist in *ventricosa* having a far greater length of the posterior part of the shell and a less tumidity of the anterior. Indeed, the form of *ventricosa* is nearer to that of *pubescens* than it is to *convexa*.

In this, as in many other similar cases of living species approaching the Crag form, *T. convexa* may be the descendant of *T. ventricosa*, but if so the time which has elapsed since the deposit of the Coralline Crag has been sufficient to produce those differences, which, as I have pointed out in the concluding remarks of my first Supplement (p. 192), I consider should justify us in designating species as distinct.

*PHOLAS INTERMEDIA*, *S. Wood.* 2nd Sup., Tab. VI, fig. 7; Tab. V, fig. 2 *a—c*.

*Dimensions.* Length, 2 inches. Breadth of valve,  $1\frac{3}{16}$  inch.

*Localities.* Cor. Crag, Gedgrave; Red Crag, Waldringfield.

The specimen represented in Tab. V, fig. 2, is in the collection of Mr. Canham, now in the Ipswich Museum, and was obtained from the phosphatic nodule pits at Waldringfield. As the valves are held together by the Red Crag material within them, I infer that the specimen died in the Red Crag, the material of which occupied the cavity

as the animal decayed, though the valves are not precisely adherent as they are in life. But for this I should have supposed it to have been a derivative from the Coralline Crag, from which the smaller specimen shown in fig. 7 of Tab. VI was obtained. I at first thought that it might be the same as the *Pholas brevis* from the Cor. Crag, of which I was enabled to figure a fragment in my first Sup. (Tab. X, fig. 24); but the differences are so great that I cannot regard the two as identical. Both shells, however, belong to the true genus *Pholas*, and not to that section of it called *Zirphea*, which was proposed as a separate genus by the late Dr. J. E. Gray; and in which the rays are confined to the anterior portion of the shell, and are bounded by a deep sulcus; and to which section *P. crispata* belongs.

The specimen, consisting of a single and smaller valve, which is represented in Tab. VI, fig. 7, was sent to me by Dr. Reed, with the name of *Pholas parva* attached, as from the Coralline Crag of Gedgrave, but it seems so closely to resemble the large shell from the Red Crag, represented in Tab. V, fig. 2, that I think it must be the younger state of it. It differs from *parva* in being considerably shorter in proportion to its breadth, the figure of that species from the Red Crag, given in the first Sup., Tab. X, being taken from a specimen which had been somewhat distorted by confinement in the crypt, and I have not seen that species in the Coralline Crag. I think it possible that the small specimen represented in fig. 24*b* of Tab. X of my first Supplement, may be a still younger state of our present shell instead of, as supposed in that Supplement, the young of the shell represented in fig. 24*a* of the same plate (and which I retain as *Pholas brevis*), as it has a similar deep opening for the foot; but a good series is required for a satisfactory determination of that question.

*Pholas dactylus*, Linn., has been given as a species from the Red Crag in Mr. Prestwich's paper 'Quart. Jour. Geol. Soc.,' vol. xxvii, p. 485, and by Mr. Bell in his paper on the English Crag, 'Proc. Geol. Assoc.,' vol. ii, No. 5, p. 26, from the "Middle (or Oldest Red) Crag." I have procured from Dr. Reed the specimen upon which this identification was based, and which has the locality of Walton Naze marked upon it, and to set the subject at rest I have had it represented in fig. 5 of Tab. V. The specimen exhibits unequivocally those characteristics which I have pointed out at p. 295 of the second volume of the 'Crag Mollusca' as distinguishing *cylicdrica* from *dactylus*, and there can be no question of its being the common Walton species, *Ph. cylindrica*, J. Sow. In the list<sup>1</sup> given in the lately published memoir of the 'Geol. Survey,' for half sheet No. 48, this species is introduced, but this is probably only by adoption from the

<sup>1</sup> There are some errors in this list, even as regards Walton; but that part of it which refers to Beaumont (and which I presume is merely a repetition of the late Mr. John Brown's list of shells obtained from that locality) is, in my opinion, quite untrustworthy. *Pyrula uniplicata*, Duj., given in the memoir list, is probably a clerical error for some other shell, possibly *Pyramidella unisulcata*, which in Mr. Prestwich's Coralline Crag list is regarded as identical with *P. læviuscula*, but which I do not consider to exist in any part of the Crag. There is also a clerical error in respect of that shell in Mr. Prestwich's Red Crag list.

list in Mr. Prestwich's paper, in which the name was introduced from the specimen of *cylindrica* now under consideration. *Pholas lata* is also given in the same memoir as from Beaumont, but I do not know such a species unless it be *Pholas crispata*, to which shell the name of *lata* was given by Lister (see the synonyms of that shell in vol. ii of 'Crag. Moll.,' p. 296).

*Venus dysera*, Brocchi, and *Venus fasciata*, Dacosta, are given by Mr. A. Bell from the Cor. Crag, but I believe the former of these to be the young state of *Venus imbricata*, a specimen of which I had represented in 'Crag Moll.,' vol. ii, Tab. XIX, fig. 3 *b*. This may *possibly* be, in the young condition, undistinguishable from *V. fasciata*, but I have not yet seen any specimen from the Cor. Crag that could be pronounced positively as identical with that species. The young of many proximate but distinct species so closely resemble each other as to be incapable, in that state, of separation, the specific distinction only appearing as the animal advances in growth. I cannot therefore admit *dysera* into my list at all, nor *fasciata* into it as a Cor. Crag shell.

## BRACHIOPODA.

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DR. JEFFREYS has recently described several species of *Brachiopoda* that were obtained by the deep-sea dredgings during the expeditions of H.M.S. "Lightning" and "Porcupine," and he has figured them in the 'Proceedings of the Zool. Soc.,' April 16th, 1878. One of these species, to which he has given the name of *Terebratula trigona*, Plate xxii, fig. 3, very strongly resembles a small specimen that I found in the Cor. Crag of Sutton, and which is figured in my first Supplement, Tab. xi, fig. 3 c, and there considered as a young or small variety of *Terebratulina caput serpentis*, and I am disposed to think that if the crag fossil could be compared with the recent shell they might perhaps be specifically united. I cannot say if there be any difference in the form of the loop in my specimen, as I am unable to separate the valves of the only one at present known to me. I have also figured another specimen from the Cor. Crag in the same plate (fig. 3 d) as *caput serpentis*, but this is so abnormal that when more and similar specimens are found it may be perhaps entitled to specific distinction, and be called *anceps*. At p. 169 of my first Supplement I have pointed out that the beak of this latter shell has the form of that possessed by *Rhynchonella*. In the 'Quarterly Journ. of the Geol. Society,' vol. xxvii, p. 137, Dr. Jeffreys says that the *Discina* from the Cor. Crag is the same species as *Discina Atlantica*, King; possibly this may be so, but, as in the case of the above *Terebratulina*, better evidence than we at present possess will be necessary for the correct determination of the question. The only two specimens of the Crag *Discina* that I know, or have heard of, were found by myself, and these are both upper valves. One of them is that figured by Mr. Davidson in 1852, also in Tab. XI of my first Supplement, and is in the collection of Crag Mollusca which I gave to the British Museum, and this is not perfect. The other (which is in my own cabinet) I found subsequently, and in this the characters are obscured by the shell being covered with a mass of *Cellepora*.

## MEMORANDUM.

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THE following species, all contained in my original synoptical list, have also since occurred in beds represented in its columns beyond what is there shown.

IN THE RED CRAG OF SUTTON AND BUTLEY.—*Nassa conglobata*. A solitary specimen found at Walton thirty-five years ago by Mr. Charlesworth, and in my collection in the British Museum, was the only instance of this shell known to me until lately. In Mr. Canham's collection, however, I observed a specimen from the Red Crag of Sutton; and it seems to me, therefore, that although it has not yet occurred in the Coralline Crag, this shell is properly a species of that Crag, and not of the Red, and is only present in the latter (albeit that it has occurred at Walton) by derivation from the Coralline.

IN THE CHILLESFORD BEDS.—*Cardita corbis* and *Abra prismatica*. Mr. Dowson informs me that he has found several specimens of these shells at Aldeby.

IN THE LOWER GLACIAL.—From a fossiliferous seam in the pebbly sands near Southwold Mr. Crowfoot has obtained several of the species given in my original list from these sands in Norfolk, and in addition *Cerithium tricinatum*, *Melampus* (Conovulus) *pyramidalis*, and *Donax vittatus*. Perfect specimens also of the latter from Belaugh and Weybourn are in my cabinet. An imperfect specimen of *Cardium* in my cabinet from Belaugh seems referable to *Cardium Islandicum*, but no reliance can be placed upon such fragments, either in this or other beds, for specific determination. Similarly, the fragments upon which the name of *C. Grænlanticum* is inserted in the list of shells given by Mr. C. Reid from these sands where they underlie the Till along the Cromer coast (in the 'Geological Magazine' for July, 1877), are equally unreliable, and might be referred to more than one large species of *Cardium*. Whether *Islandicum* or *Grænlanticum*, the Belaugh and Cromer fragments are probably those of the same species only, and would answer as well for the one as for the other of these shells. Mr. Crowfoot also

gives the name *Grænlandicum* among those of the species obtained by him from the pebbly sands at Southwold. *Astarte sulcata*, *Ostrea edulis*, and *Pleurotoma turricula* are also given by Mr. C. Reid as having been found by him in these sands on the Cromer coast.

IN THE MIDDLE GLACIAL.—*Hydrobia ulvæ*. A specimen of this shell was found by Mr. Harmer at Lound, near Yarmouth, in association with some of the commoner species of this deposit.

IN THE MARCH GRAVEL.—*Tellina lata*. A small specimen of this shell from March is in the Cambridge Museum. Mr. Harmer has found the freshwater shell, *Cyrena fluminalis*, in numbers in this gravel, associated with *Cardium edulis* and other marine shells; an association corresponding to that which occurs in the Hessele gravel at Kelsea Hill in Yorkshire.

ADDITION TO THE SYNOPTICAL LIST GIVEN AT PAGE 203 OF FIRST  
SUPPLEMENT TO "THE CRAG MOLLUSCA."

Species and varieties new to the Synoptical List are in Roman letters. Species already in the Synoptical List are in italics, and are only inserted to indicate their occurrence in some one or other of the formations, referred to in the separate columns, beyond what is specified in the original list. Such of the latter as are marked † are given in the Lower Glacial column, on the authority *only* of Mr. C. Reid's paper, on the "Cromer Pliocene," in the 'Geological Magazine' for July, 1877.

Page in 2nd Supp.		Cor. Crag.	Red Crag, Walton.	Red Crag, Sutton and Butley.	Serobicularia Crag.	Fluvio-marine Crag.	Chillesford Beds.	Lower Glacial.	Middle Glacial.	Upper Glacial.	Post Glacial, Kelsey.	Post Glacial, March.	Post Glacial, Hun- stanton.	Post Glacial, Nar Buckenarth.	Living, Britain.	Living, Mediter- ranean.	Living, elsewhere.	REMARKS.
4	<i>Columbella sulculata</i> , <i>S. Wood</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	<i>Nassa prismatica</i> , Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	x	x	
4	— <i>incrassata</i> , Müll., var. tumida.	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	— <i>angulata</i> ? Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
52	— <i>globulata</i> , Broc.	?	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
3	— <i>microstoma</i> , <i>S. Wood</i> ( <i>N. prismatica</i> , var. <i>limata</i> ).	x	x	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	<i>Buccinum Dalei</i> ? J. Sow., var. <i>distorta</i> .	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
1	— <i>undatum</i> , Linn., var. <i>distorta</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
	— — var. <i>tenerum</i>	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	
1	— <i>nudum</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2	— <i>declive</i> , <i>S. Wood</i>	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	<i>Murex Reedii</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	— <i>recticanalis</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	— <i>Crowfootii</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	— <i>pseudo Nystii</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	<i>Ranella</i> ? <i>Anglica</i> , <i>A. Bell</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	<i>Triton connectens</i> ? <i>S. Wood</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	<i>Fusus Waelii</i> , <i>Nyst</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	— <i>obscurus</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	— <i>nodifer</i> , <i>A. Bell</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	— ? <i>exacutus</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	<i>Trophon</i> (Sipho) <i>Islandicus</i> , <i>Gmel.</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	x	...	x	
7	— (—) <i>gracilis</i> , <i>Da Costa</i>	x	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	— (—) <i>tortuosus</i> , <i>L. Reeve</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
7	— (—) <i>Olavii</i> , <i>Beck</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
9	— <i>Kröyeri</i> , <i>Moll.</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
8	— <i>pseudo Turtoni</i> , <i>S. Wood</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	<i>Pleurotoma Morreni</i> , <i>De Konink</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	— <i>teres</i> , <i>Forbes</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	— <i>gracilicostata</i> , <i>S. Wood</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	— <i>curtistoma</i> , <i>A. Bell</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	— <i>pannus</i> , <i>Bast.</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	— <i>senilis</i> , <i>S. Wood</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	— <i>catenata</i> , <i>A. Bell</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
†	— <i>turricula</i> , <i>Mont.</i>	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	
22	<i>Cancellaria</i> (Admete) <i>Avara</i> ? <i>Say</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
22	— <i>crassistriata</i> , <i>A. Bell</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	<i>Cerithium derivatum</i> , <i>S. Wood</i>	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	...	
23	— <i>Greenii</i> ? <i>Adams</i>	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	x	
52	— <i>tricinctum</i> , Broc.	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	
27	<i>Turritella Taurinensis</i> , <i>Mich.</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	— <i>incrassata</i> , var. <i>acutan-</i> gula? Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
27	— — var. <i>subangulata</i> , Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
25	<i>Scalaria torulosa</i> , Broc.	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
26	— <i>geniculata</i> ? Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

Page in 2nd Supp.		Cor. Crag.	Red Crag, Walton.	Red Crag, Sutton and Butley.	Serobicularia Crag.	Fluvio-marine Crag.	Chillesford Beds.	Lower Glacial.	Middle Glacial.	Upper Glacial.	Post Glacial, Kelsey.	Post Glacial, March.	Post Glacial, Hun- stanton.	Post Glacial, Nar- rickenth.	Living, Britain.	Living, Mediterra- nean.	Living elsewhere.	REMARKS.
24	<i>Chemnitzia senistriata</i> , S. Wood	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
24	— <i>internodula</i> , S. Wood, } var. <i>ligata</i> .	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	...	Derivative.
39	<i>Odostomia derivata</i> , S. Wood	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	...	
28	<i>Eulima Hebe</i> , Semper	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	— <i>subula</i> , D'Orb.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Derivative?
27	— <i>Naumanni</i> ? von Kōnen	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
28	— <i>robusta</i> , A. Bell	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
29	<i>Rissoa parva</i> ? Da Costa	x	...	...	...	...	...	...	...	...	...	...	...	...	x	x	x	
29	— <i>costulata</i> , Alder	x	...	...	...	...	...	...	...	...	...	...	...	...	x	x	x	
40	— <i>proxima</i> , Alder	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	...	
35	<i>Assimineia Grayana</i> , Leach	...	...	...	...	x	...	...	...	...	...	...	...	...	x	...	...	
30	<i>Hydrobia obtusa</i> , Sandberger	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	...	
53	— <i>ulca</i> , Penn.	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	In the middle glacial of Lound. Doubtful whether from the Cor. Crag or from the Red of Butley, &c.
33	<i>Amaura hesterna</i> , S. Wood	?	...	?	...	...	...	...	...	...	...	...	...	...	...	...	...	
30	<i>Natica</i> ( <i>Amauropsis</i> ) Japo- nica? A. Adams.	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
31	— <i>triseriata</i> ? Say	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	x	
32	— <i>helicina</i> var. <i>heliciformis</i> , S. Wood	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
31	— <i>Groenlandica</i> , Beck, var. <i>declivis</i> .	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	<i>Adeorbis</i> ? <i>naticoides</i> , S. Wood	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	A very doubtful species.
38	<i>Melampus fusiformis</i> , S. Wood, var. <i>elongatus</i> .	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	Derivative?
52	— <i>pyramidalis</i> , J. Sow.	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	{ Rackheath; Southwold; and, according to Mr. Reid, Runton.
BIVALVIA.																		
41	<i>Ostrea unguolata</i> , Nyst.	x	x	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
53	† — <i>edulis</i> , Linn.	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	
43	<i>Mytilus edulis</i> , var. <i>ungulatus</i>	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
42	— — var. <i>galloprovincialis</i>	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
43	<i>Pectunculus pilosus</i> , var. <i>in-</i> subricus, Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
43	— var. <i>nummarius</i> , Broc.	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
44	<i>Nucula turgens</i> , S. Wood	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	Derivative?
45	<i>Lucina crassidens</i> , S. Wood	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	Derivative.
45	<i>Lucinopsis Lajonkairii</i> , Payr., var. <i>subobliqua</i> .	x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
45	<i>Chama gryphoides</i> , Linn., var. <i>gryphina</i> .	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	Derivative in Red Crag.
52	<i>Cardita cordis</i> , Phil.	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	Aldeby.
52	<i>Cardium Islandicum</i> ? Linn.	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	
53	† <i>Astarte sulcata</i> , Da Costa	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	
52	<i>Donax vittatus</i> , Da Costa ... ( <i>anatinus</i> , F. & H.)	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	{ Belaugh and Weybourne; also, according to Mr. C. Reid, from Runton.
53	<i>Tellina lata</i> , Gmel.	...	...	...	...	...	...	...	...	...	x	...	...	...	...	...	...	{ A specimen from the March gravel in the Cambridge Mu- seum.
52	<i>Abra prismatica</i> , Mont.	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	Several specimens from Aldeby.
47	<i>Macra ponderosa</i> ? Stimpson	...	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	
47	— <i>arcuata</i> , J. Sow.	...	...	...	...	...	...	...	x	...	...	...	...	...	...	...	...	
47	<i>Thracia papyracea</i> , Poli	...	...	...	...	...	x	...	...	...	...	...	...	...	...	...	...	Perfect from Belaugh.
48	<i>Pholas intermedia</i> , S. Wood	x	...	x	...	...	...	...	...	...	...	...	...	...	...	...	...	

The following species should be omitted from the Synoptical List altogether, viz. *Trophon Norvegicus*, see p. 7; *Plautoma violacea*, see p. 20; and *Pholas dactylus*, see p. 49; and from the Coralline and Red Crag columns of the list, *Ostrea edulis*, see p. 42.





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# PLATE I.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained.
1, a, b.	<i>Buccinum nudum</i> . . .	1	Cor. Crag, Sutton.
2, a, b.	— <i>Dalei</i> ? (dis- torted) . . . . .	2	Cor. Crag, Sutton.
3.	<i>Columbella</i> ? ( <i>Astyris</i> ) <i>sul-</i> <i>culata</i> . . . . .	4	Red Crag, Shottisham.
4.	<i>Nassa microstoma</i> . . .	3	Cor. Crag ? Boyton.
5, a, b.	<i>Buccinum undatum</i> ? (dis- torted) . . . . .	1	Red Crag, Butley.
6.	<i>Nassa prismatica</i> . . .	2	Cor. Crag, Sutton.
7, a, b.	<i>Murex recticanalis</i> . . .	15	Cor. Crag, Sutton.
8, a, b.	— <i>pseudo-Nystii</i> . . .	14	Cor. Crag ? Boyton.
9, a, b.	— <i>Reedii</i> . . . . .	13	Cor. Crag ? Boyton.
10, a, b, c.	<i>Fusus Waelii</i> . . . . .	9	Cor. Crag ? Boyton.
11.	<i>Trophon altus</i> . . . . .	8	Red Crag, Butley.
12, a, b.	<i>Fusus obscurus</i> . . . . .	11	Cor. Crag ? Boyton.
13.	<i>Purpura lapillus</i> . . .	5	Fluvio-marine, Bramerton.
14, a, b.	<i>Triton connectens</i> ? . . .	15	Red Crag, Waldringfield.
15.	<i>Murex Crowfootii</i> . . .	15	Cor. Crag ? Boyton.



1a



2a



3



2b



1b



4a



4b



5a



5b



6



7a



7b



15



8a



8b



9a



10a



10c



10b



9b



11



12a



12b



15



11a



11b







# PLATE II.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained.
1.	<i>Trophon pseudo-Turtoni</i> . . .	8	Red Crag, Waldringfield.
2, a.	— <i>tortuosus</i> . . .	6	Red Crag, Waldringfield.
2, b.	— — var. . .	6	Red Crag, Sutton.
3, a.	— <i>Islandicus</i> . . .	6	Red Crag, Sutton.
3, b.	— — . . .	6	A recent specimen.
4.	— <i>gracilis</i> . . .	7	Cor. Crag, Gedgrave.
5.	— <i>propinquus</i> . . .	7	Cor. Crag, Gedgrave.
6, a, b.	<i>Pleurotoma Morreni</i> . . .	16	Red Crag, Waldringfield.
7, a, b.	— <i>teres</i> . . .	18	Cor. Crag, Sutton.
8.	— <i>gracilicostata</i> . . .	18	Cor. Crag, Sutton.
9, a, b.	— <i>curtistoma</i> ? . . .	17	Cor. Crag? Gedgrave.
10, a, b.	<i>Buccinum declive</i> . . .	2	Cor. Crag? Boyton.
11.	<i>Chemnitzia internodula</i> var. <i>ligata</i> . . . . .	24	Fluv.-mar. Crag, Bramerton.
12.	— — . . .	24	Cor. Crag, Sutton.
13.	<i>Scalaria torulosa</i> . . .	25	Cor. Crag? Boyton.
14.	<i>Turritella (Mesalia) pene-</i> <i>polaris</i> . . . . .	26	Cor. Crag? Boyton.
15.	<i>Cerithium variculosum</i> . . .	23	Red Crag, Walton Naze.
16.	<i>Turritella incrassata</i> , var. <i>acutangulata</i> . . . . .	27	Cor. Crag, Sutton.
17.	<i>Turritella incrassata</i> , var. <i>subangulata</i> . . . . .	27	Cor. Crag, Sutton.
18.	<i>Fusus</i> ? <i>exacutus</i> . . .	11	Cor. Crag, Sutton.
19.	<i>Turritella Taurinensis</i> ? . . .	27	Red Crag, Sutton (derived).
20.	<i>Chemnitzia senistriata</i> . . .	24	Cor. Crag, Sutton.



2a



2b



1



3a



3b



6a



6b



4



5



7a



7b



8



9a



9b



10a



10b



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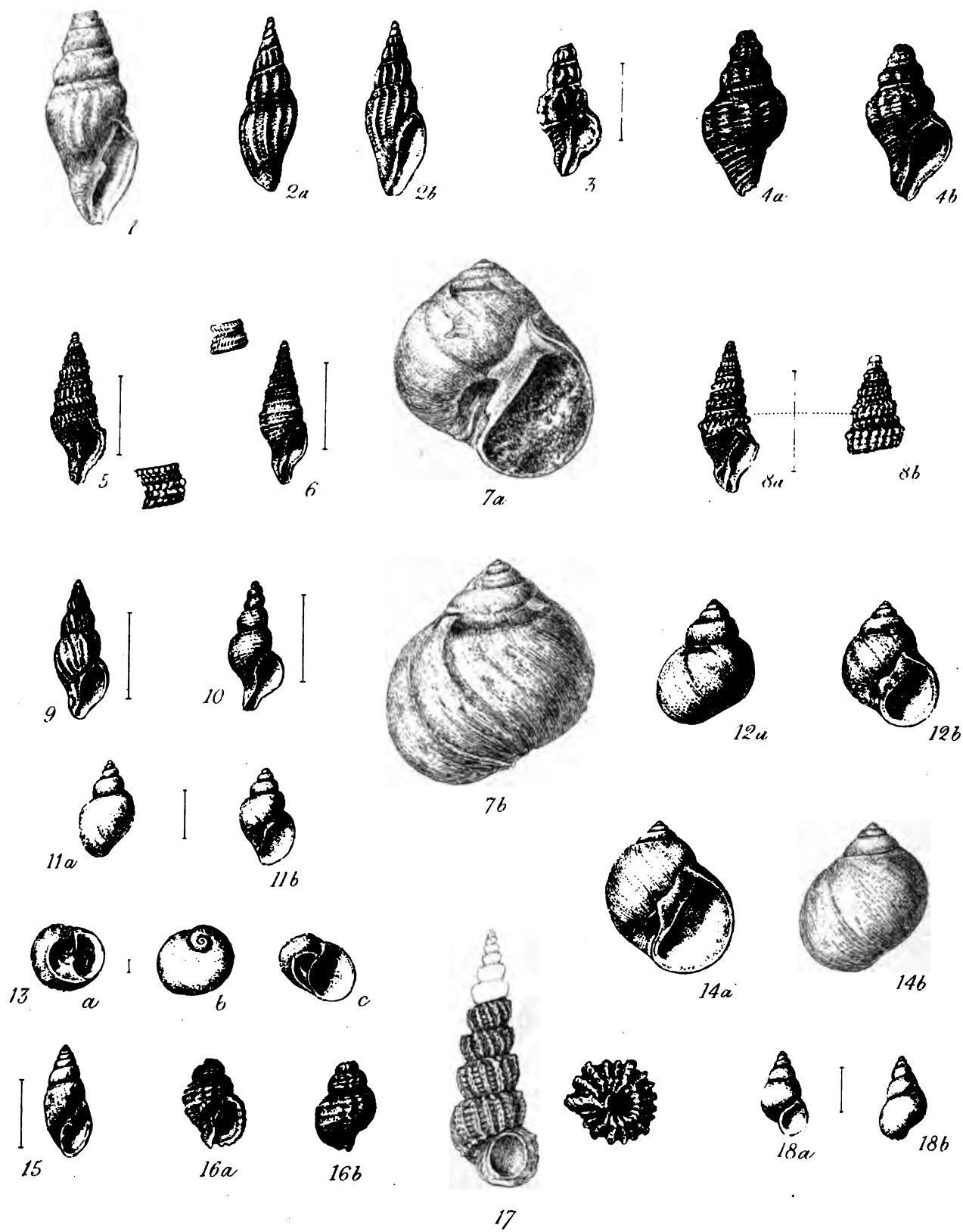


# PLATE III.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained.
1.	<i>Borsonia</i> ? . . . .	21	Red Crag, Waldringfield.
2 a, b.	<i>Pleurotoma senilis</i> . . . .	20	Red Crag, Sutton.
3.	<i>Ranella Anglica</i> . . . .	16	Red Crag, Waldringfield (derived ?).
4 a, b.	<i>Fusus nodifer</i> . . . .	12	Red Crag, Waldringfield (derived ?).
5.	<i>Pleurotoma catenata</i> . . . .	20	Cor. Crag, Gedgrave.
6.	— <i>pannus</i> . . . .	21	Cor. Crag, near Orford.
7 a, b.	<i>Natica heliciformis</i> . . . .	32	Cor. Crag, Gedgrave.
8 a, b.	<i>Pleurotoma Icenorum</i> . . . .	19	Cor. Crag, near Orford.
9.*	<i>Trophon Kröyeri</i> ? . . . .	9	Red Crag, Shottisham.
10.†	<i>Columbella sulcata</i> (de- formed) . . . .	5	Red Crag, Walton Naze.
11 a, b.	<i>Natica (Amauropsis) Ja- ponica</i> . . . .	30	Red Crag, Butley.
12, a, b.	<i>Natica Grænlantica</i> ? var. <i>declivis</i> . . . .	31	Red Crag, Butley.
13 a—c.	<i>Adeorbis ? naticoides</i> . . . .	34	Cor. Crag, Sutton.
14 a, b.	<i>Natica triseriata</i> ? . . . .	31	Red Crag, Butley.
15.	<i>Melampus fusiformis</i> , var. <i>elongatus</i> . . . .	38	Red Crag, Waldringfield.
16 a, b.	<i>Cancellaria crassistriata</i> . . . .	22	Red Crag, Waldringfield (derived ?).
17 a, b.	<i>Scalardia fimbriosa</i> . . . .	25	Cor. Crag, near Orford.
18.	<i>Assimineæ Grayana</i> ? . . . .	35	Fluvio-marine Crag, Bramerton.

\* Referred to at p. 9 as Tab. III, fig. 8.

† Referred to at p. 5 as Tab. III, fig. 11.



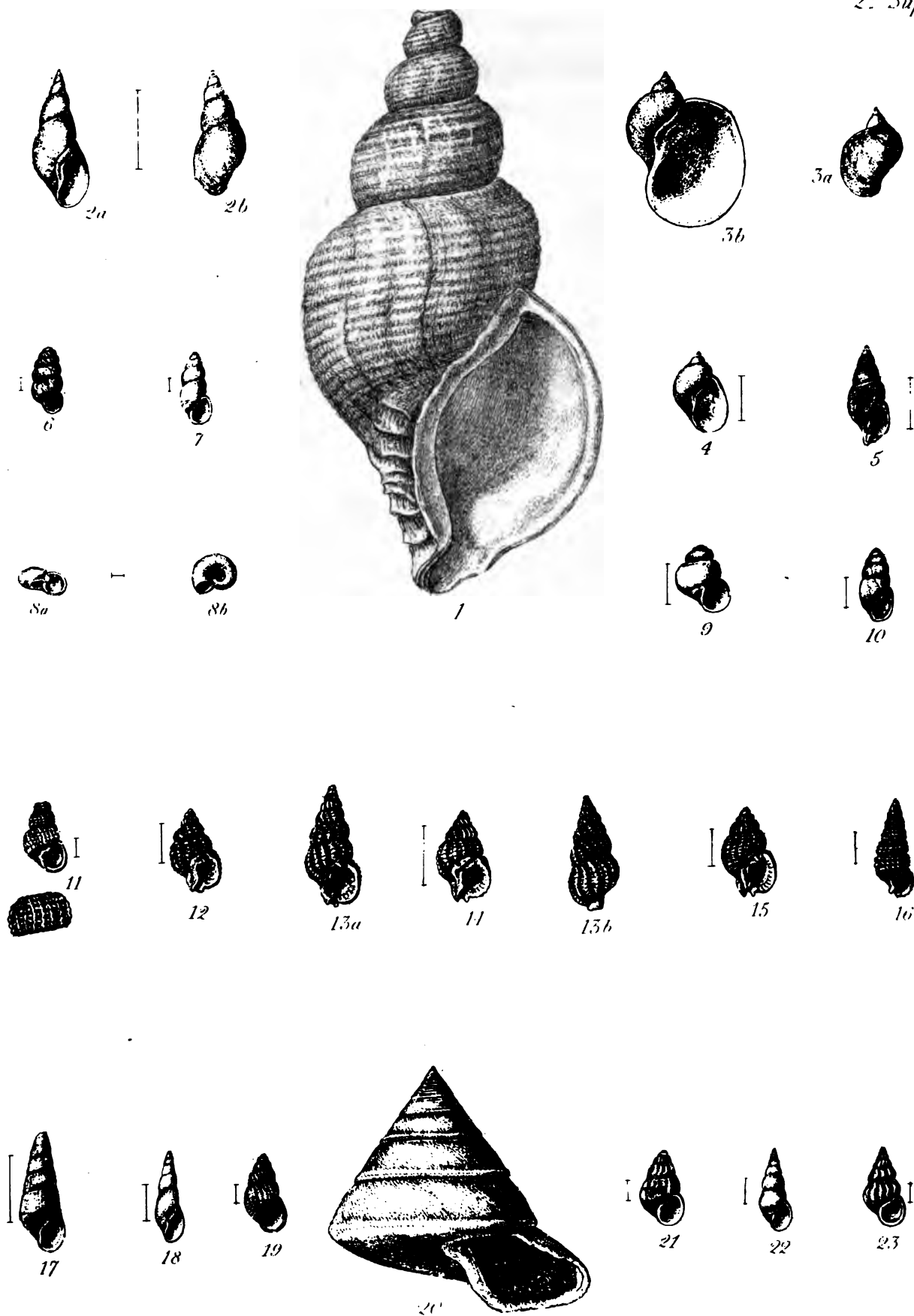






# PLATE IV.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained.
1.	<i>Trophon pseudo-Turtoni</i> .	8	Red Crag, Waldringfield.
2, a, b.	<i>Limnæa palustris</i> . . .	37	Fluv.-mar. Crag, Bramerton.
3, a.	— <i>auricularia</i> . . .	36	Fluv.-mar. Crag, Bramerton.
b.	Figure of a recent specimen by mistake of the en- graver . . . . .		
4.	<i>Limnæa peregra</i> . . .	37	Fluv.-mar. Crag, Bramerton.
5.	<i>Cancellaria avara</i> ? . .	22	Red Crag, Waldringfield.
6.	<i>Pupa edentula</i> . . .	37	Fluv.-mar. Crag, Bramerton.
7.	<i>Hydrobia obtusa</i> . . .	30	Fluv.-mar. Crag, Bramerton.
8, a—b.	<i>Valvata cristata</i> . . .	36	Fluv.-mar. Crag, Bramerton.
9.	— <i>piscinalis</i> (anti- qua) . . .	36	Fluv.-mar. Crag, Bramerton.
10.	<i>Bulimus lubricus</i> . . .	38	Red Crag, Butley.
11.	<i>Scalaria geniculata</i> ? . .	26	Cor. Crag, Sutton.
12.	<i>Nassa granulata</i> , var. <i>nana</i> . . . . .	4	Red Crag, Sutton.
13, a—b.	— <i>consociata</i> . .	4	Red Crag, Waldringfield.
14.	— <i>angulata</i> ? . .	4	Red Crag? Boyton.
15.	— <i>incrassata</i> , var. <i>tumida</i> . . .	4	Red Crag, Butley.
16.	<i>Cerithium Greenii</i> ? . .	23	Chillesford bed, Bramerton.
17.	<i>Eulima robusta</i> . . .	28	Red Crag, Waldringfield.
18.	— <i>Hebe</i> . . .	28	Cor. Crag, Sutton.
19.	<i>Rissoa reticulata</i> . . .	30	Cor. Crag, Sutton.
20.	<i>Trochus ziziphinus</i> , var. .	34	Cor. Crag, Sutton.
21.	<i>Rissoa parva</i> . . .	29	Cor. Crag, Sutton.
22.	<i>Eulima Naumanni</i> ? . .	27	Cor. Crag, Sutton.
23.	<i>Rissoa costulata</i> . . .	29	Cor. Crag, Sutton.



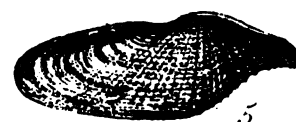
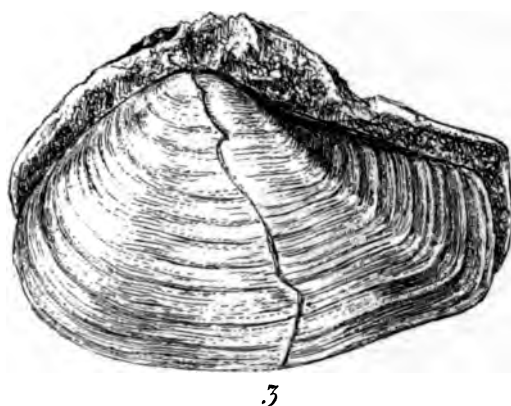




# PLATE V.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained.
1, a—c.	<i>Chama gryphoides</i> , var. <i>gryphina</i> . . . .	45	Red Crag, Waldringfield (derived).
2, a—c.	<i>Pholas intermedia</i> . . . .	48	Red Crag, Waldringfield.
3.	<i>Thracia ventricosa</i> . . . .	48	Cor. Crag, Ramsholt.
4, a—b.	<i>Lucina crassidens</i> . . . .	45	Red Crag, Waldringfield ? (derived).
5.	<i>Pholas cylindrica</i> . . . .	49	Red Crag, Walton Naze. Specimen to which the name of <i>dactylus</i> was assigned.
6, a, b.	<i>Nucula turgens</i> . . . .	44	Red Crag, Waldringfield ? (derived).
7, a.	<i>Ostrea unguolata</i> (outside lower valve) . . . .	41	Cor. Crag, Ramsholt.
7, b.	— — (inside upper valve) . . . .	41	Cor. Crag, Ramsholt.

The inside view of this oyster, not having been reversed by the Engraver, fig. 7 *b* presents an erroneous appearance, inasmuch as that the umbo of the valve should turn to the right instead of the left. Viewed by reflection in a mirror the representation will be found correct.



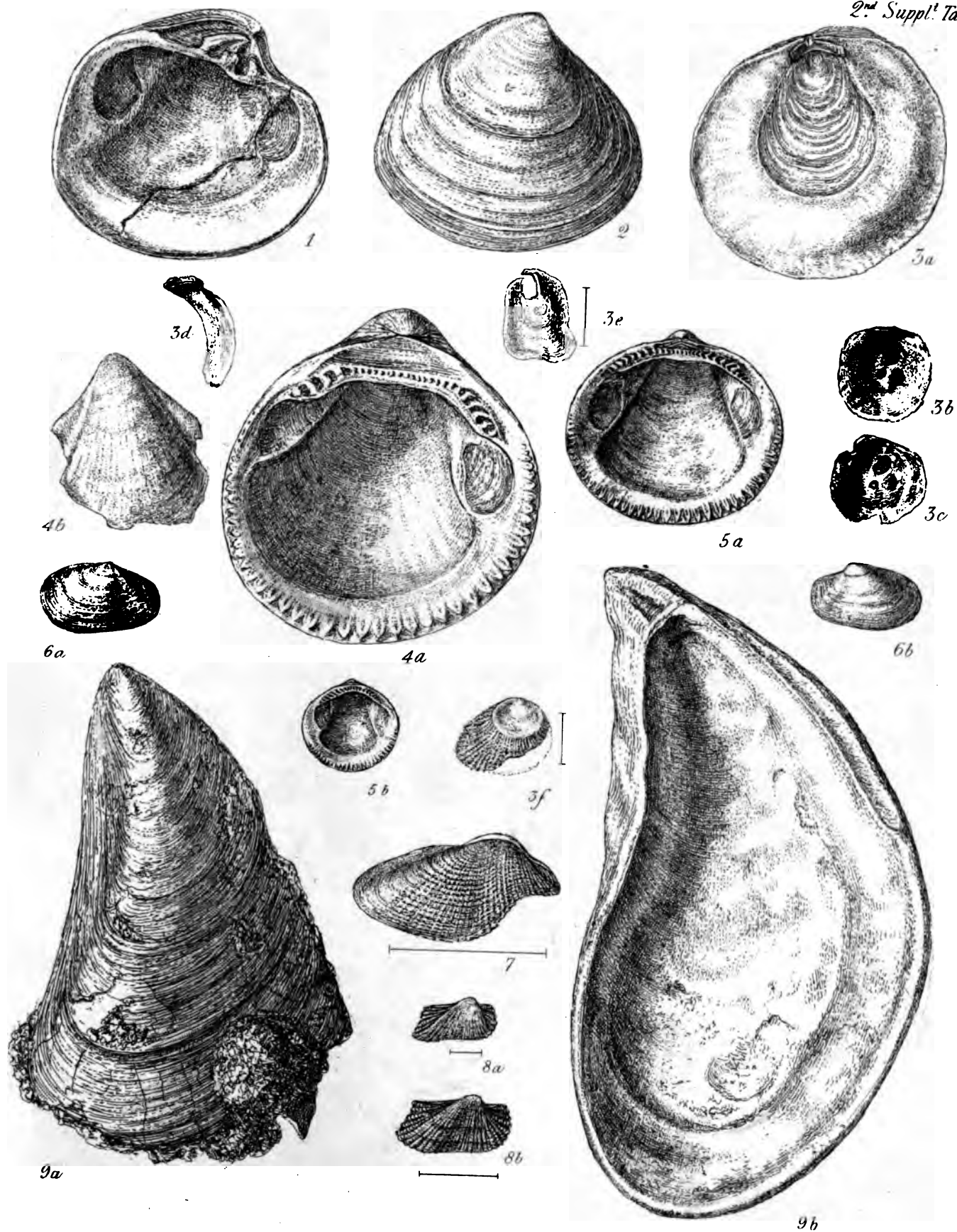






# PLATE VI.

FIG.	Names of the shells.	PAGE	Localities from which the specimens figured were obtained,
1.	<i>Astarte mutabilis</i> . . . .	46	Cor. Crag, near Orford.
2.	<i>Mastra ponderosa</i> . . . .	47	Red Crag, Waldringfield.
3 a.	<i>Anomia striata</i> (upper valve)	41	Cor. Crag. near Orford.
b.	— — (inside of upper valve) . . . .	41	Cor. Crag, Sutton.
d.	— — (thickened portion of lower valve) .	41	Cor. Crag, near Orford.
e.	— — (lower valve with opening) . . . .	41	Cor. Crag, Sutton.
f.	— — (upper valve showing early part plain, afterwards striated) . .	41	Cor. Crag, Sutton.
4 a.	<i>Pectunculus pilosus</i> , var. <i>in-</i> <i>subricus</i> ) . . . . .	43	Cor. Crag, Ramsholt.
b.	Inside lining of ditto . . .	43	Cor. Crag, Sutton.
5 a.	<i>Pectunculus glycimeris</i> . . .	43	Cor. Crag, Sutton.
b.	— — var. <i>nummarius</i> . . . . .	43	Cor. Crag, Sutton.
6 a.	<i>Thracia papyracea</i> juv. ( <i>villosiuscula</i> ?) . . . . .	47	Chillesford bed at Sudbourn Church Walks.
b.	— — juv. . . . .	47	Chillesford bed at Sudbourn Church Walks.
7.	<i>Pholas intermedia</i> . . . .	48	Cor. Crag, Gedgrave.
8 a.	<i>Arca tetragona</i> . . . .	44	Cor. Crag, Sutton.
b.	— — . . . .	44	Cor. Crag, Sutton. The specimen to which the names <i>A. puella</i> and <i>A. nodulosa</i> have been assigned.
9 a.	<i>Mytilus edulis</i> , var. <i>gallo-</i> <i>provincialis</i> . . . .	42	Red Crag, Sutton.
b.	— — var. <i>ungu-</i> <i>latus</i> . . . . .	43	Cor. Crag ? Boyton.



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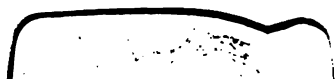
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